SECNAV INSTRUCTION 12280.9

3 1 OCT 1977

From: Secretary of the Navy
To: All Navy and Marine Corps activities
        employing civilians

Subj: Computer-Assisted Manpower Analyses System
        (CAMAS) Guidance Manual

Encl: (1) Subject Manual

1. Purpose. To issue a revised Computer-Assisted Manpower
Analyses System (CAMAS) guidance manual including the
civilian personnel category codes. This revised manual is
provided as enclosure (1).

2. Cancellation. The following are hereby cancelled:

    a. OCMMNOTE 12280 of 28 Jan 1974, Civilian Manpower
        Category Codes

    b. CMML 280-1 of 3 March 1975, Computer-Assisted
        Manpower Analyses System (CAMAS)

3. Background. The Computer-Assisted Manpower Analyses
System (CAMAS) is designed to provide historical data on
personnel movements and occupational average salary
distributions. Advanced features include an extensive
modeling capability which is designed for policy testing and
exploring "what if" questions. These capabilities are being
extended to include Equal Employment Opportunity (EEO) goal
planning and tracking. Also, the civilian personnel
category codes have been revised to provide EEO goals data
consistent with the PATCO (Professional, Administrative,
Technical, Clerical, and Other) coding scheme of the Civil
Service Commission. The revised EEO goals policy will be
provided in a separate instruction.

4. Scope of Revision

    a. This manual combines two previous instructions into
one document. Included are the CAMAS system description
along with the revised DON occupation-level (DONOL) civilian
personnel category codes.

b. The revised CAMAS system description includes a discussion of the extensions for EEO goals planning and tracking.

c. Future linkages of CAMAS to include the aggregate planning models in the Shore Activity Manpower Planning System (SAMPS) advanced development research project are discussed.

d. The revised DONCL civilian personnel category codes consistent with the CSC PATCO are provided. This includes a cross reference list of the CSC occupational series codes to the DONOL codes. Grade/level groupings used in conjunction with the DONOL civilian personnel category codes are also provided.

5. Action

a. The DONOL civilian personnel category codes will be used where possible in analytical studies calling for an aggregation of Civil Service Series Codes.

b. Historical CAMAS Manpower statistics will be provided by OCP when requested via memorandum or letter. Projected CAMAS information will be provided upon execution of a suitable resource-sharing agreement between OCP and the command involved.

c. This instruction should be filed in a loose-leaf binder, to simplify page changes as necessary.

EDWARD HIDALGO
Assistant Secretary of the Navy
(Manpower, Reserve Affairs & Logistics)

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See: _____

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        is maintained)

RECORD OF CHANGES			
CORRECTION OR CHANGE NO.	DATE OF CHANGE	DATE ENTERED	BY WHOM ENTERED

COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM
(CAMAS) GUIDANCE MANUAL
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VI. Policy testing models

Enclosure (1)

COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)
System Description

I. General description

    The Computer-Assisted Manpower Analyses System (CAMAS)
is designed to provide a wide variety of manpower related
reports. Particular emphasis in the current operational
capability is on the provision of historical data on
personnel movements and of projected data on retirements and
occupational intake requirements. Advanced features include
an extensive modelling capability which is designed for
policy testing and exploring "what if" questions. In
addition to the operational capability, CAMAS is being used
to support a number of modeling and statistical research
studies as part of the program of the Navy Personnel
Research and Development Center. The purpose of this manual
is to describe CAMAS, including some of the kinds of
analysis which are possible.

    An important, heavily used part of CAMAS is the
subsystem to provide personnel movement statistics.
Considerable use is also made of distribution reports. This
includes the capability to produce average salary values by
occupation-grade/level groupings. Analysis of these types
has been facilitated by the development of a computer-ori-
ented extension to the Civil Service Commission Occupation
Codes. These Codes are based on a hierarchical aggregation
scheme so that the level of detail can be tailored to the
requirements of a particular study. These DON occupation-
level (DONOL) Codes are provided in Appendix A.

    The CAMAS is designed to provide expected retirement
projections. The expected retirement projections are
obtained by first obtaining the historical loss rates of
those eligible for retirement. These rates are then applied
to the population of retirement eligibles as they become
eligible in the years of the projections.

    Intake requirement projections can be developed either
as one-shot projections or as part of a "what if" modelling
process. Gross requirements data are obtained either
through proportionalization of the current on-board
multiplied by future total strength projections or through
interaction with workload planning systems. These gross
requirements rates are then evaluated simultaneously in the
computer to obtain the intake requirement projections.

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Equal Employment Opportunity (EEO) goals planning and
tracking has been added to CAMAS. This was done through the
addition of EEO goals and related constraints to the models.
A labor market analysis system is included as part of the
EEO goals planning extensions. As time progresses, regional
labor market analyses tailored to the location of Navy
installations will be possible.

In addition to the organizational levels of detail,
CAMAS can also be used to develop information by Five Year
Defense Plan (FYDP), appropriation, and geographical
categories. The FYDP related reports can be developed by
mission support categories and by program elements.
Geographical areas include naval districts and Field
Divisions of the Office of Civilian Personnel.

Testing of the CAMAS has been accomplished at all
organizational levels of the Department of the Navy.
Experience indicates that the aggegate projection capability
can be applied to the larger field activities (generally
2000 employees or greater). Additionally, the personnel
movements statistics have been useful in management studies
of medium size field activities (500-2000 employees). The
distribution reports are of general use to most activities,
especially in studies where comparative statistics are
desired.

Research is continuing on the extensions of CAMAS to
assist in manpower and personnel management decisions. This
includes its integration as part of a total Department of
the Navy manpower planning system and its use to support
activity level decisions. At the activity level, particular
attention is being paid to the use of aggregate planning
techniques integrated with man-job assignments. Support of
the exploratory development phases is being provided by the
Chief of Naval Development in coordination with Navy
Personnel Research and Development Center. The follow-on to
this preliminary work is the Shore Activity Manpower
Planning System (SAMPS) advanced development research
supported by the Navy Personnel Research and Development
Center. The objective of this latter research is to
accomplish feasibility tests of the necessary computer
software to allow activities to do their own manpower
analyses using the most advanced techniques and models.

II. Personnel movement and distribution reports

The base upon which CAMAS resides is the historical data
on personnel movements and population distributions. The

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sources of data are the master files of the Personnel
Automated Data System (PADS), and the civilian end-strength
files of the Navy Cost Information System (NCIS).

Specialized data files are built to be used in develop-
ing the various CAMAS outputs. First, a condensed version
of the PADS master file is extracted quarterly. These files
are then expanded to include minority data and selected
activity identifiers. Additionally, the specialized man-
power category codes are developed and included on the com-
plete CAMAS data files. The data elements on this CAMAS
file are shown in Table 1. The central files to support
CAMAS extend from June 1970 and are available for the
quarters thereafter.

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Computer Assisted Manpower Analyses System (CAMAS)
Data Elements

Personnel Data   Activity Data

1. Social Security Number   1. Unit Identification Code

2. Sex   2. FYDP Program Element

3. Birthdate   3. Major Claimant

4. Service Computation Date 4. Naval District

5. Minority   5. Field Division

6. Pay Plan   6. Labor Market

7. Grade or Level   7. Appropriation Code

8. Work Schedule

9. Save Pay Indicator

10. Special Rate Indicator

11. Pay Basis

12. Salary

13. Step

14. CAMAS Occupation Code

15. CAMAS Level

Description of the personnel data elements can be found in
OCMMINST 12280.3 of 1 July 1973

Table 1

Enclosure (1)

Civilian manpower category codes have been developed for use with CAMAS to provide a systematic structure for aggregating the Civil Service Commission occupation codes. The dictionary of these DONOL codes is given in Appendix A. The codes provide consistency between various analytical studies involving manpower planning, career planning, and current status reporting.

The manpower category codes have three levels of aggregation. These groupings allow the Department of the Navy civilian manpower to be related to external as well as internal supply and demand. Internal Department relationships were built into the codes at all levels of aggregation. At the census of population level, the aggregations were developed to stress those occupational areas of high interest and of statistical significance to the Department. The skill groups correspond as closely as possible to the civilian career management programs and to other natural groups for overall skills planning. The DON major occupational groups allow some occupational specificity where highly aggregated data is required for conciseness of reporting.

The eight DON major occupational groups can be related directly to the six Bureau of Labor Statistics major occupational groups. This can be done by combining the first three DON major occupation groups (scientists and engineers, other professional, and subprofessionals and technicians) into the BLS professional and technical group. The remaining DON groups correspond directly to the BLS groups.

The DONOL civilian personnel category codes are designed to provide various aggregations of the Civil Service Commission occupation series codes. The personnel category codes contain a built-in sort sequence as follows:

Positions	Aggregation
1	Major occupation group
1-2	Skill group
1-4	DONOL occupation code

For example, Code 2201 breaks down as follows:

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2XXX	Scientists and engineers
22XX	Physical scientists
2201	Chemists

All current Civil Service Commission series codes, including those in which the Department employs no personnel, are covered this list.

In addition to the DONOL occupational coding, the grades or levels are aggregated into five groupings. For the GS occupations they are: GS 1-4, 5-8, 9-12, 13-15, 16-18. For ungraded they include: apprentices; helper and semiskilled; journeymen; progressmen, leadermen, etc.; and supervisors. The pay plans and steps used for the ungraded groupings can be found in Appendix A.

The CAMAS file contains an individual record for each Social Security Number. This provides the ability of essentially taking a "snapshot" of the manpower population at a given time period. Figure 1 shows how personnel movements or transition data are obtained by simply using two periods of changeable PADS data. ;394 Figure 2 is a measurement of the movement Department-wide among five of the engineering occupations (i.e., DONOL codes 2312, 2314, 2315, 2317, 2320).

The period of time covered is 1 year (September 1975-September 1976). The column and row headings on Figure 2 are the same. The reason for this is to indicate the particular occupations where the population under consideration began in September 1975 and the particular occupations where they ended in September 1976. For example, of the 4,691 NEC Engineers (DONOL Code 2320), 4,210 remained in NEC Engineering, 19 transferred to Civil Engineering, 39 to Mechanical Engineering, 8 to Electrical Engineering, 57 to Electronic Engineering, and 358 left. Thus, the data in Figure 1 are an explicit measurement of the volume of movement of the engineers during the September 1975-September 1976 time period.

The rates of movement can be developed easily from the data shown in Figure 1. All that has to be done is to divide the numbers in each row of data by the number of personnel that were on-board in that particular population at the first time period. For example, by dividing the

Inter-Occupation Movement
(Engineers)
Department-wide

	No. at SEP 75	2312 CIVIL	2314 ELEC'L	2315 ELEC'C	2317 MECH	2320 NEC	EXITS
Civil (2312)	1,049	931			3	41	74
Elec'l (2314)	1,067		914	54	2	20	77
Elec'c (2315)	8,294		22	7,760	2	108	402
Mech (2317)	4,352	4	3	5	3,925	143	272
NEC (2320)	4,691	19	8	57	39	4,210	358
Entries		111	107	477	317	341	
No. at SEP 76		1,065	1,054	8,353	4,288	4,863	

Figure 1

Enclosure (1)

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Inter-Occupation Movement
(Engineers)
Department-wide

	No. at SEP 75	2312 CIVIL	2314 ELEC'l	2315 ELEC'C	2317 MECH	2320 NEC	EXITS
CIVIL (2312)	1,049	.887			.002	.039	.070
ELEC'L (2314)	1,067		.856	.050	.001	.013	.072
ELEC'C (2315)	8,294		.002	.935		.013	.048
MECH (2317)	4,352			.001	.901	.032	.062
NEC (2320)	4,691	.004	.001	.012	.008	.897	.076
ENTRIES		111	107	477	317	341	
NO. AT SEP 76		1,065	1,054	8,353	4,288	4,863	

Figure 2

4,210 NEC Engineers that remained in September 1975 by the
4,691 that were on-board in September 1975, a figure of .897
or 89.7% is obtained. Similarly, .004 or 0.4% tranferred to
Civil Engineering. The data for the five engineering
occupations under study are given in Figure 2.

The CAMAS outputs either a matrix or a listing,
depending on the number of categories involved. The
movement data are displayed both as whole numbers and as
rates. If the number of categories involved is over 30,
only the listing format is available. The listing output
can accomodate up to 500 categories. The listing output
includes a considerable amount of English text to facilitate
understanding of the data. Examples of the two types of
outputs are given in Figures 3 and 4. The first is a grade
matrix and the second is an occupation matrix. These data
are displayed both as whole numbers and rates. The types of
movement data which can be produced in CAMAS are given in
Table 2.

The CAMAS transition rate subsystem includes an extract
capability to limit the population to be considered. If
necessary, extracts of extracts can be accomplished. In
this way movement statistics of specialized populations can
be obtained. Up to 96 categories can be used in a given
extract. The data elements upon which extracts can be made
are given in Table 3.

RELATIVE FREQUENCY OF MOVEMENT INTER-GRADE
OF DIRECT HIRE U.S. CITIZENS

FROM SEP 75 TO SEP 76

EXAMPLE OF A MAJOR CLAIMANT TRANSITION MATRIX FOR FY 76

Figure 3

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		NO AT SEP 75	SEX BOTH	MINORITY	BIRTHDATE		SERV COMP DATE			MC 09	ND ALL	PROG ALL	EL	PAY PLAN GS	APPR CD ALL	SNDL TPE ALL	OCC GRP ALL	STATE CDE ALL	
	GRADE		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	POPULATION EXITS
01		0																	
02		0																	
03		8				.750													.250
04		32				.437	.187												.375
05		39					.589	.102	.076										.230
06		24						.791	.083										.125
07		44						.022	.681	.045	.068								.181
08		9								.666	.222								.111
09		30									.600		.133						.066
10		2										1.000							
11		30											.533	.300					.166
12		23												.913	.086				
13		67												.014	.850	.044			.089
14		82													.024	.878	.012		.085
15		55															.854	.018	.127
16		9																.888	.111
POPULATION GAINS			0	1	3	11	14	16	8	6	5	0	9	15	22	10	2	0	
NO AT SEP 76			0	1	3	31	43	40	43	14	34	2	29	46	83	85	50	9	

TOTAL AT SEP 75 IS 454   TOTAL AT SEP 76 IS 513

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OFFICE OF CIVILIAN PERSONNEL

RELATIVE FREQUENCY OF MOVEMENT INTER-GRADE
OF DIRECT HIRE U.S. CITIZENS

FROM SEP 75 TO SEP 76

EXAMPLE OF A MAJOR CLAIMANT TRANSITION MATRIX FOR FY 76

SEX BOTH	MINORITY	BIRTHDATE GRADE		SERV COMP DATE			MC 09	ND ALL	PROG EL ALL	PAY PLAN GS		APPR CD ALL		SNDL TPE ALL	OCC GRP ALL		STATE CDE ALL	
	NO AT SEP 75	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	POPULATION EXITS
01	0																	
02	0																	
03	8				6													2
04	32				14	6												12
05	39					23	4	3										9
06	24						19	2										3
07	44						1	30	2	3								8
08	9								6	2								1
09	30									24		4						2
10	2										2							
11	30											16	9					5
12	23												21	2				•
13	67												1	57	3			6
14	82													2	72	1		7
15	55															47	1	7
16	9																8	1
POPULATION GAINS		0	1	3	11	14	16	8	6	5	0	9	15	22	10	2	0	
NO AT SEP 76		0	1	3	31	43	40	43	14	34	2	29	46	83	85	50	9	

TOTAL AT SEP 75 IS 454   TOTAL AT SEP 76 IS 513

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RELATIVE FREQUENCY OF MOVEMENT INTER-STATE OCC
OF DIRECT HIRE U.S. CITIZENS

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FROM SEP 75 TO SEP 7G

EXAMPLE OF AN ACTIVITY LEVEL TRANSITION MATRIX FOR FY 76

SEX	MINORITY	BIRTHDATE	SERV COMP DATE	MC	ND	PROG EL	PAY PLAN	APPR CD	UIC ACT	OCC GRP	STATE LEV	GRADE/LEV
BOTH				ALL	ALL	ALL	ALL	ALL	65888	ALL	ALL	ALL

OF THE   5 EMPLOYEES AT SEP 75 IN STATE TYPE 43 :
      4 OR   80.0 % STAYED IN 43

                                                                              1 OR   20.0 % LEFT THE POPULATION.

OF THE   243 EMPLOYEES AT SEP 75 IN STATE TYPE 44 :
    222 OR   91.3 % STAYED IN 44   1 OR   0.4 % WENT TO 50
      2 OR   0.8 % WENT TO 85

                                                                             18 OR   7.4 % LEFT THE POPULATION.

OF THE   13 EMPLOYEES AT SEP 75 IN STATE TYPE 45 :
      1 OR   7.6 % WENT TO 42   9 OR   69.2 % STAYED IN 45
      1 OR   7.6 % WENT TO 49

                                                                              2 OR   15.3 % LEFT THE POPULATION.

THERE WERE NO EMPLOYEES AT SEP 75 IN STATE TYPE 46 .

THERE WERE NO EMPLOYEES AT SEP 75 IN STATE TYPE 47 .

OF THE   5 EMPLOYEES AT SEP 75 IN STATE TYPE 48 :
      5 OR 100.0 % STAYED IN 48

OF THE   119 EMPLOYEES AT SEP 75 IN STATE TYPE 49 :
      1 OR   0.8 % WENT TO 40   1 OR   0.8 % WENT TO 42
    103 OR   86.5 % STAYED IN 49

                                                                             14 OR   11.7 % LEFT THE POPULATION.

OF THE   343 EMPLOYEES AT SEP 75 IN STATE TYPE 50 :
      5 OR   1.4 % WENT TO 23   1 OR   0.2 % WENT TO 42
      3 OR   0.8 % WENT TO 43   1 OR   0.2 % WENT TO 48
    314 OR   91.5 % STAYED IN 50   3 OR   0.8 % WENT TO 56
      2 OR   0.5 % WENT TO 80   1 OR   0.2 % WENT TO 81

                                                                             13 OR   3.7 % LEFT THE POPULATION.

THERE WERE NO EMPLOYEES AT SEP 75 IN STATE TYPE 51 .

OF THE   274 EMPLOYEES AT SEP 75 IN STATE TYPE 53 :
      6 OR   2.1 % WENT TO 48   3 OR   1.0 % WENT TO 49
    239 OR   87.2 % STAYED IN 53   2 OR   0.7 % WENT TO 81

Figure 4 14

Computer-Assisted Manpower Analyses System (CAMAS)
Types of Manpower Data Possible

Personnel movements can be developed between:

1. GS Grades

2. DONOL Level

3. DONOL Major Occupation Group

4. DONOL Major Occupation Group and Level

5. DONOL Functional Occupation Group

6. DONOL Functional Occupation Group and Level

7. DONOL Census Occupation Group

8. DONOL Census Occupation Group and Level

9. Program Element

10. Naval Activity

11. Major Claimant

12. Naval District

13. Field Division

Table 2

Computer-Assisted Manpower Analyses System (CAMAS)
Data Elements Accessible With
Extract Capability

1. GS Grade/CFWS Level

2. Pay Plan

3. DONCL Census Occupation Group and Level

4. DCNOL Level

5. Unit Identification Code (UIC)

6. Major Claimant

7. Naval District

8. Field Division

9. Appropriation Code

10. FYDP Program Element

Table 3

In addition to the extract capability, the CAMAS transition rate subsystem includes the option to delimit the population under consideration during the time for which the movement calculations are being made. For example, one could obtain the inner-occupation movement of women within a given major claimant. Similarly, grade transitions of personnel born since 1935 in a specific activity could be developed. The data elements upon which limits can be applied are given in Table 4.

The transition reports can be used to derive an accurate quantified idea of actual personnel movements. At the same time as the report is produced, a list of entries to and losses from the population under study can be produced. These provide a trial from which further researches can be made. Examples of these lists are given in Figures 5 and 6.

Another often used capability of CAMAS is production of distribution and average salary reports. These reports can be developed by the different levels of aggregation permitted by the DONOL codes. These reports can be produced by the levels of detail shown on Table 5. Examples of the distribution reports at the three levels of DONOL aggregations Navywide are shown in figures 7 through 9.

The average salary reports provide the mean salary values by the various CAMAS aggregations at the point in time designated. These reports can be produced by all the levels of detail and combinations possible with the distribution reports. An example of one of these reports for the ungraded population by DONOL functional occupation groups and levels as of 30 June 1974 is shown in figure 10.

As can be surmised from the above descriptions, the CAMAS personnel movements and distribution reports can be used to support a wide variety of informational needs. Equally important is their function as the base for projections and testing "what if" alternatives. The remaining sections of this manual will be concerned with these applications.

III.   Expected retirement projections

A frequently asked question preliminary to manpower planning exercises is "How many of each category of employee will retire"? The answer is dependent on two factors: (1) who is eligible and (2) the rate at which retirements occur.

Enclosure (1)

Computer-Assisted Manpower Analyses System (CAMAS)
Data Elements Upon Which Limits May Be Placed
During Transition Rate Calculations

1. Sex

2. Minority Code

3. Birthdate

4. Service Computation Date

5. Major Claimant

6. Naval District

7. Field Division

8. FYDP Program Element

9. Unit Identification Code

10. DONOL Census Occupation Group and Level

11. GS Grade/CFWS Level

Table 4

Enclosure (1)

GRADE   MOVEMENT BY U.S. CITIZENS
POPULATION GAINS FROM SEP 75 TO SEP 76

SEX	BIRTHDATE	SERVICE COMP DATE	UIC ACCT NO	OCCUPATION	LEVEL	STATE
F	04 SEP 41	29 SEP 63	96021	GS 0C335	07	55732
F	05 MAY 40	26 OCT 66	96021	GS 00301	07	54722
F	07 APR 45	12 JAN 69	96021	GS 00318	07	60842
F	02 MAR 25	03 FEB 58	96021	GS 00318	07	60842
M	19 APR 31	26 JUN 52	96021	GS CU301	07	54722
F	30 NOV 54	09 JUN 74	41421	GS 00334	07	45412
F	04 MAR 54	03 JUN 74	41423	GS 00318	07	60842
F	21 DEC 36	04 JUL 64	96021	GS 0C203	08	54722
F	02 DEC 21	20 MAY 66	96021	GS 00335	08	55732
F	21 MAY 20	17 APR 48	96021	GS 0C203	U8	54722
F	16 FEB 45	21 FEB 64	96021	GS 00203	08	54722
F	10 AUG 20	03 DEC 45	96021	GS 00203	08	54722
F	01 FEB 45	09 JAN 67	96021	GS 01531	08	59782
M	13 JAN 48	28 FEB 73	96021	GS 00334	09	45413
F	23 APR 33	18 MAR 65	41423	GS 00345	09	49513
M	15 MAR 50	04 SEP 73	00016	GS 01102	09	42353
M	14 FEB 30	17 MAR 71	00013	GS 00342	09	49483
F	16 NOV 51	27 NOV 69	00016	GS 00318	09	60843
M	29 OCT 52	14 MAR 74	41423	GS 00560	11	40333
M	17 MAY 50	10 OCT 73	41423	GS 00560	11	40333
M	08 MAR 48	23 NOV 70	00016	GS 01102	11	42353
F	04 OCT 42	01 JUN 72	00013	GS 01410	11	34313
F	09 SEP 41	06 NOV 61	96021	GS 00301	11	49483
F	23 OCT 50	20 SEP 72	96021	GS 00201	11	41343
M	15 MAR 49	26 MAR 71	41423	GS 0C560	11	40333
M	28 JUL 40	11 SEP 71	96021	GS 00180	11	22073
M	02 JUL 44	07 AUG 67	96021	GS 00180	11	22073
M	17 MAR 43	09 JUN 66	96021	GS 00334	12	45413
M	26 FEB 44	16 AUG 69	96021	GS 0C230	12	41343
F	26 JUN 32	26 OCT 56	96021	GS 00235	12	41343
F	09 SEP 16	12 MAY 49	96021	GS 00160	12	41343
F	09 MAY 44	13 NOV 62	96021	GS 00334	12	45413
M	16 OCT 45	23 NOV 70	96021	GS 00201	12	41343
M	20 JAN 38	21 MAY 72	96021	GS 00235	12	41343
M	29 OCT 44	30 AUG 69	00016	GS 0C881	12	23203
M	29 JUN 43	07 MAR 67	96021	GS 00201	12	41343
M	22 MAY 46	12 JUL 71	96021	GS 0C235	12	41343
M	14 JUL 47	08 NOV 69	41421	GS 00504	12	40333
M	15 SEP 46	06 DEC 70	41423	GS 00560	12	40333
M	30 MAY 41	09 APR 69	96021	GS 00201	12	41343
M	05 SEP 48	11 JUL 73	00016	GS 0C881	12	23203
F	24 MAY 46	27 NOV 69	96021	GS 00334	12	45413
M	03 MAY 40	05 DEC 62	96021	GS 00212	13	41344
M	21 AUG 46	19 APR 71	96021	GS 00201	13	41344
F	27 FEB 43	25 SEP 67	96021	GS 00201	13	41344
M	16 AUG 41	27 AUG 65	41423	GS 00560	13	40334

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GRADE   MOVEMENT BY U.S. CITIZENS
POPULATION EXITS FROM SEP 75 TO SEP 76

SEX	BIRTHDATE	SERVICE COMP D/TE	UIC ACCT NO	OCCUPATION	LEVEL	STATE
F	04 AUG 56	18 SEP 72	96021	GS 00322	03	60821
F	01 JUN 56	18 SEP 72	96021	GS 00322	03	60821
F	17 JUL 48	28 SEP 73	00012	GS 00312	04	60831
F	11 SEP 55	17 SEP 74	41423	GS 0C322	04	60821
F	28 OCT 52	01 NOV 71	96021	GS 00322	04	60821
M	20 APR 38	07 NOV 66	00013	GS 02005	04	62891
F	03 MAR 53	06 JAN 74	00012	GS 00322	04	60821
F	05 MAR 48	03 SEP 72	41421	GS 00318	04	60841
F	19 APR 55	00//// 00	64648	GS 00312	04	60831
F	23 AUG 50	14 SEP 71	00012	GS 00322	04	60821
F	02 DEC 53	06 JAN 75	41422	GS 00099	04	79991
F	18 SEP 53	22 SEP 72	00013	GS 00322	04	60821
F	19 MAY 55	00//// 00	41423	GS 00322	04	60821
M	25 JUL 50	18 APR 70	00013	GS 00305	04	63931
F	15 NOV 46	15 DEC 69	96021	GS 00305	05	63932
F	16 OCT 47	26 JAN 70	00013	GS 00301	05	63942
F	18 SEP 53	21 AUG 72	96021	GS 00301	05	63942
F	05 NOV 49	24 APR 74	96021	GS 00318	05	60842
F	22 AUG 53	22 OCT 71	41423	GS 00301	05	63942
F	17 DEC 49	29 MAY 73	64648	GS 00301	05	63942
F	27 NOV 49	17 DEC 71	00013	GS 00301	05	63942
F	10 SEP 45	15 JUL 66	41423	GS 00318	05	60842
F	31 MAR 54	04 OCT 72	00013	GS 00301	05	63942
F	27 APR 53	08 MAR 73	41423	GS 00501	06	61852
F	23 AUG 46	31 AUG 64	00013	GS 00204	06	63942
F	03 APR 50	11 AUG 69	00013	GS 00301	06	63942
F	12 DEC 11	14 MAR 58	96021	GS 00301	07	54722
M	04 FEB 14	28 JUL 43	96021	GS 00305	07	63932
F	15 MAR 48	01 JUL 66	00013	GS 00301	07	54722
F	01 MAR 21	26 FEB 42	96021	GS 00301	07	54722
F	25 JUN 51	14 AUG 70	96021	GS 00986	07	59772
F	17 JAN 37	18 FEB 57	00013	GS 00318	07	60842
F	16 MAY 46	06 JUL 64	41421	GS 00318	07	60842
F	18 SEP 18	19 APR 48	96021	GS 00301	07	54722
F	17 CCT 45	24 NOV 65	00013	GS 00301	08	54722
F	20 JAN 49	09 DEC 66	64648	GS 00318	09	60843
F	20 MAR 24	16 APR 44	96021	GS 01531	09	59783
F	31 OCT 17	22 OCT 41	41423	GS 00560	11	40333
M	26 JAN 20	25 OCT 62	64648	GS 01102	11	42353
F	13 OCT 47	17 JUN 69	64648	GS 01102	11	42353
F	16 JUN 16	09 FEB 52	00012	GS 00501	11	40333
M	07 SEP 47	10 JUN 70	00013	GS 01410	11	34313
F	22 MAY 36	08 MAR 59	96021	GS 00212	13	41344
M	23 MAR 46	11 JUN 68	96021	GS 00230	13	41344
M	06 MAY 20	26 JAN 42	41421	GS 00301	13	49484
M	21 NOV 42	19 AUG 67	96021	GS 00201	13	41344

Figure 6   20

Computer-Assisted Manpower Analyses System (CAMAS)
Summary Outputs Available

Types of Reports:

1. Population Distributions
2. Average Salary Distributions
3. Expected Retirements
4. Gross Requirements
5. Summary (Multiple-Periods) Intake Requirements
6. Detailed (One Period at a Time) Intake Requirements

Types of Populations:

1. Unit Identification Code (UIC)
2. Major Claimant
3. Naval District
4. Field Division
5. Appropriation Code
6. FYDP Program Element

Table 5

Enclosure (1)

DEPARTMENT OF THE NAVY
OFFICE OF CIVILIAN PERSONNEL

POPULATION DISTRIBUTED BY CAMAS STATE AS OF SEP 1976

ALL NAVY

CODE	OCCUPATION CLASS	GS 1-4	GS 5-8	GS 9-12	GS 13-15	GS 16-18	TOTAL
2	SCIENTIST-ENGINEER	0	1.522 -	17.279	12.129	152	31.082
3	OTHER PROFESSIONAL	0	1.132	1.955	899	23	4.009
4	MANAGEMENT-ADMINS	43	3.872	21.570	5.706	49	31.240
5	TECHNICIANS	2.940	14.094	17.539	382	0	34.955
6	CLERICAL	32.155	19.895	283	3	0	52 336
7	OTHER GENRL SCHEDL	4.316	4.901	261	3	0	9.481
	ALL NAVY	39.454	45.416	58.887	19.122	224	163.103

Figure 7   22

DEPARTMENT OF THE NAVY
OFFICE OF CIVILIAN PERSONNEL

POPULATION DISTRIBUTED BY CAMAS STATE AS OF SEP 1976

ALL NAVY

CODE	OCCUPATION CLASS	APPRENT	SEMI-SKI	JOUR-MEN	LEADERS	SUPERVRS	TOTAL
8	CRFTSMN-OPERATIONS	6.783	37.319	63.606	8.390	10.148	126.246
9	LABORERS	1	5.844	8	169	194	6.216
	ALL NAVY	6.784	43.163	63.614	8.559	10.342	132.462

Figure 7 (continued)   23

DEPARTMENT OF THE NAVY
OFFICE OF CIVILIAN PERSONNEL

POPULATION DISTRIBUTED BY CAMAS STATE AS OF SEP 1976

ALL NAVY

CODE	OCCUPATION CLASS	GS 1-4	GS 5-8	GS 9-12	GS 13-15	GS 16-18	TOTAL
22	SCIENTIST	0	157	2.361	2.126	46	4.690
23	ENGINEERS	0	1.253	13.638	9.207	95	24.193
24	MATHEMATICIANS	0	112	1.280	796	11	2.199
30	ACCOUNTANTS	0	248	893	343	3	1.487
31	MEDICAL	0	819	229	121	1	1.170
32	LEGAL	0	1	90	241	18	350
33	EDUCATION	0	21	440	150	1	612
34	MISC PROFESSIONAL	0	43	303	44	0	390
40	FINANCL MANAGEMENT	3	442	1.482	531	13	2.471
41	PERSNNL MANAGEMENT	1	280	1.630	497	6	2.414
42	PROCUREMENT	3	440	2.214	677	10	3.344
43	LOGISTICS	5	729	3.156	610	3	4.503
44	QUALITY ASSURANCE	5	131	2.012	78	0	2.226
45	COMPUTER SPECIALST	2	348	3.407	902	0	4.659
46	INTELLIGENCE	0	28	250	114	3	395
47	INVSTGATOR-EXAMINR	6	76	393	95	0	570
48	ART-INFRMIN SPCLST	1	190	980	137	0	1.308
49	MANAGERS-ADMNSTRTR	17	1.208	6.046	2.065	14	9.350
50	ENGNRNG-SCNC TCHNC	452	2.953	12.329	322	0	16.056
51	MEDICAL TECHNICIAN	1.054	544	56	0	0	1.654
53	LOGISTICS TECHNCNS	170	3.563	2.498	3	0	6.234
54	MANAGEMENT TCHNCNS	181	3.577	753	1	0	4.512
55	COMPUTER TCHNICIAN	532	1.468	634	4	0	2.638
56	INFORMATION WORKER	31	439	494	1	0	965
57		0	1	0	0	0	1
59	LEGAL RELTN WORKER	520	1.549	775	51	0	2.895
60	SECRETARIAL	13.318	5.879	72	0	0	19.269
61	FINANCIAL CLERK	2.722	3.257	95	3	0	6.077
62	LOGISTICS CLERKS	3.997	3.967	8	0	0	7.972
63	GENERAL CLERICAL	12.118	6.792	108	0	0	19.018
70	FIRE AND POLICE	3.000	4.488	261	3	0	7.752
79	STUDENT TRAINEE	1.316	413	0	0	0	1.729
	ALL NAVY	39.454	45.416	58.887	19.122	224	163.103

Figure 8

24

DEPARTMENT OF THE NAVY
OFFICE OF CIVILIAN PERSONNEL

POPULATION DISTRIBUTED BY CAMAS STATE AS OF SEP 1976

ALL NAVY

CODE	OCCUPATION CLASS	APPRENT	SEMI-SKI	JOUR-MEN	LEADERS	SUPERVRS	TOTAL
80	ELCTRNC MCHN OPRTR	687	1.007	5.510	533	630	8.367
81	ELECTRICIANS	813	1.463	6.551	779	729	10.335
82	MCHN TOOL OPERATOR	1.475	1.115	7.983	894	980	12.447
83	MTL PRCSSNG WRKRS	476	534	3.354	92	325	4.781
84	METAL WORKERS	943	1.521	6.348	785	780	10.377
85	AIRCRAFT WORKERS	176	1.628	2.836	573	390	5.603
86	PIPEFITTING WORKER	1.002	1.298	5.516	636	662	9.114
87	WOODWORKERS	250	1.132	2.671	262	380	4.695
88	MRN EQPMNT RPAIRMN	53	102	1.129	113	215	1.612
89	MISC CRFTSMN-OPRTR	908	27.519	21.708	3.723	5.057	58.915
99	LABORERS	1	5.844	8	169	194	6.216
	ALL NAVY	6.784	43.163	63.614	8.559	10.342	132.462

Figure 8 (continued)   25

DEPARTMENT OF THE NAVY
OFFICE OF CIVILIAN PERSONNEL

POPULATION DISTRIBUTED BY CAMAS STATE AS OF SEP 1976

ALL NAVY

CODE	OCCUPATION CLASS	GS 1-4	GS 5-8	GS 9-12	GS 13-15	GS 16-18	TOTAL
2201	CHEMIST	0	31	457	231	4	723
2202	METALLURGIST	0	7	112	69	0	188
2203	GEOLOG-GEOPHYSICS	0	17	67	34	0	118
2204	OCEANOGRAPHER	0	6	246	118	2	372
2205	PHYSICIST	0	39	1,005	1,117	16	2,177
2206	PHYSCL SCIENCE NEC	0	19	198	345	22	584
2207	PSYCHOLOGISTS	0	24	164	161	0	349
2208	BIOLOGICAL SCIENTS	0	14	112	51	2	179
2309	ARCHITECTS	0	15	247	50	0	312
2310	AEROSPACE ENGINEER	0	91	682	636	7	1,416
2311	CHEMICAL ENGINEER	0	11	158	87	1	257
2312	CIVIL ENGINEER	0	59	706	300	0	1,065
2313	NAVAL ARCHITECTS	0	45	456	461	7	969
2314	ELECTRICAL ENGINR	0	99	758	197	0	1,054
2315	ELECTRONIC ENGINR	0	470	4,818	3,039	26	8,353
2316	INDUSTRIAL ENGINR	0	42	326	140	0	508
2317	MECHANICAL ENGINR	0	307	2,895	1,085	1	4,288
2318	WELDING ENGINEER	0	7	127	110	1	245
2319	NUCLEAR ENGINEER	0	69	532	254	8	863
2320	ENGINEERS NEC	0	38	1,933	2,848	44	4,863
2421	MATHEMATICIANS	0	84	896	372	1	1,353
2422	STATISTICIAN	0	15	111	52	0	178
2423	OPRTNS RES ANALYST	0	13	273	372	10	668
3024	ACCOUNTANTS	0	248	893	343	3	1,487
3125	PROFESSIONAL NURSE	0	757	99	0	0	856
3126	PHYSICIAN	0	0	6	93	1	100
3127	HEALTH PROFSNL NEC	0	62	124	28	0	214
3228	LAWYER	0	1	69	177	15	262
3229	PATENT ADVISOR	0	0	21	64	3	88
3330	EDUCATOR	0	21	440	150	1	612
3431	LIBRARIAN	0	35	226	18	0	279
3432	PROFESSIONAL NEC	0	8	77	26	0	111
4033	FINANCL MANAGEMENT	3	442	1,482	531	13	2,471
4134	PERSNNL MANAGEMENT	1	280	1,630	497	6	2,414
4235	PROCUREMENT MNGMNT	3	440	2,214	677	10	3,344

Figure 9

26

DEPARTMENT OF THE NAVY
OFFICE OF CIVILIAN PERSONNEL

POPULATION DISTRIBUTED BY CAMAS STATE AS OF SEP 1976

ALL NAVY

CODE	OCCUPATION CLASS	GS 1-4	GS 5-8	GS 9-12	GS 13-15	GS 16-18	TOTAL
4336	SUPPLY MANAGEMENT	1	601	2,194	361	1	3,158
4337	TRANSPRTATN MNGMNT	4	64	349	82	1	500
4338	SAFETY MANAGEMENT	0	23	265	19	0	307
4339	LOGISTICS MNGMNT	0	41	348	148	1	538
4440	QUALITY ASSURANCE	5	131	2,012	78	0	2,226
4541	COMPUTER SPECIALST	2	348	3,407	902	0	4,659
4642	INTELLIGENCE SPECL	0	28	250	114	3	395
4743	INVSTGATOR-EXAMINR	6	76	393	95	0	570
4844	VISUAL INFORMATION	0	25	184	16	0	225
4845	TECHNICAL WRITER	0	58	444	43	0	545
4846	PUBLIC INFORMATION	0	33	113	23	0	169
4847	INFRMIN SPCLST NEC	1	74	239	55	0	369
4948	GEN MNGMNT-ADMNSTR	1	383	1,261	615	10	2,270
4949	BUSNS MNGR-SPCLST	5	261	297	71	0	634
4950	MANAGEMENT ANALYST	4	86	866	190	1	1,147
4951	PROGRAM ANALYSIS	0	58	601	472	2	1,133
4952	MIL PERS MANAGEMNT	2	12	136	42	0	192
4953	PRDCTN CNTRL MGMNT	0	0	911	98	0	1,009
4954	INSTRUCTOR	1	139	312	17	0	469
4955	AIR TRAFFIC CONTRL	1	20	120	7	0	148
4956	EQUIPMENT SPECLIST	0	0	878	72	0	950
4957	SECURITY ADMNSTRTN	0	87	208	48	0	343
4958	PRINTING MANAGEMNT	0	37	151	40	1	229
4959	MNGR-ADMNSTRTR NEC	3	125	305	393	0	826
5060	ENGNRING DRAFTSMEN	88	316	1	0	0	405
5061	ELECTRONICS TCHNCN	43	959	5,401	114	0	6,517
5062	ENGINEERING TCHNCN	239	1,013	5,961	199	0	7,412
5063	INDSTRL ENG TCHNCN	7	70	574	6	0	657
5064	PHYSCL SCNC TCHNCN	75	595	392	3	0	1,065
5165	MEDICAL TECHNICIAN	101	247	36	0	0	384
5166	DENTAL TECHNICIAN	168	70	3	0	0	241
5167	MEDICAL ATTENDANT	785	227	17	0	0	1,029
5368	QUALITY INSPECTORS	9	152	204	3	0	368
5369	LOGSTC TECHNCN NEC	161	3,411	2,294	0	0	5,866
5471	ACCOUNTING TCHNCNS	181	2,333	308	0	0	2,822

Figure 9 (continued)   27

POPULATION DISTRIBUTED BY CAMAS STATE AS OF SEP 1976

ALL NAVY

CODE	OCCUPATION CLASS	GS 1-4	GS 5-8	GS 9-12	GS 13-15	GS 16-18	TOTAL
5472	MNGMNT TCHNCN NEC	0	1.244	445	1	0	1.690
5573	COMPUTER TECH-OPRT	532	1.468	634	4	0	2.638
5674	ILLUSTRATOR	2	167	244	0	0	413
5675	PHOTOGRAPHER	21	238	207	1	0	467
5676	INFRMTN WORKER NEC	8	34	43	0	0	85
5781		0	1	0	0	0	1
5977	LEGAL RELTN WORKER	0	85	18	0	0	103
5978	STATSTCL-MATH ASST	30	92	42	0	0	164
5979	COMMUNICATION SPEC	0	43	178	50	0	271
5980	COMM EQPNNT OPRTR	166	659	41	0	0	866
5981	TECHNICIANS NEC	324	670	496	1	0	1.491
6082	TYPISTS	10.833	717	1	0	0	11.551
6083	STENOGRAPHERS	1.981	576	11	0	0	2.568
6084	SECRETARIES	504	4.586	60	0	0	5.150
6185	ACCOUNTING CLERKS	1.492	1.581	4	0	0	3.077
6186	PAYROLL CLERKS	1.078	1.451	85	3	0	2.617
6187	TRAVEL CLERKS	152	225	6	0	0	383
6288	SHIPPING CLERKS	898	837	8	0	0	1.743
6289	SUPPLY CLERKS	3.016	2.938	0	0	0	5.954
6290	LOGSTICS CLRKS NEC	83	192	0	0	0	275
6391	OFFICE MACHINE OPR	2.516	647	3	0	0	3.166
6392	SALES WORKERS	704	27	0	0	0	731
6393	MAIL + MESSENGER	2.414	545	16	0	0	2.975
6394	CLERICAL NEC	6.484	5.573	89	0	0	12.146
7095	FIREMEN	1.379	3.035	212	3	0	4.629
7096	GUARDS	1.338	720	17	0	0	2.075
7097	POLICE + DETECTIVE	283	733	32	0	0	1.048
7999	STUDENT TRAINEE	1.316	413	0	·0	0	1.729
	ALL NAVY	39.454	45.416	58.887	19.122	224	163.103

Figure 9 (continued)   28

POPULATION DISTRIBUTED BY CAMAS STATE AS OF SEP 1976

ALL NAVY

CODE	OCCUPATION CLASS	APPRENT	SEMI-SKI	JOUR-MEN	LEADERS	SUPERVRS	TOTAL
8002	INST MECH ELCTRNIC	32	11	651	18	55	767
8003	FIRE CNTRL MCHNCS	63	2	249	40	28	382
8004	ELCTRNC EQPT RPRMN	526	968	3,430	435	426	5,785
8005	ELEC MECH ORDNANCE	26	2	19	0	3	50
8006	A/C INST MCH ELCTR	0	0	158	7	14	179
8007	ELCTRNC MCHNCS NEC	40	24	1,003	33	104	1,204
8109	ELECTRICIANS	704	821	4,774	594	558	7,451
8110	ELCTRCL LINE WRKRS	1	3	27	1	4	36
8111	PWR PLANT + ELCTRC	12	2	60	7	5	86
8112	AIRCRAFT ELECTRICN	44	517	945	107	97	1,710
8113	ELECTRICIANS NEC	52	120	745	70	65	1,052
8218	MODEL MAKERS METAL	0	0	62	5	12	79
8219	MACHINISTS	1,427	892	6,855	866	875	10,915
8220	TOOLMAKER	39	2	439	16	53	549
8221	MCH TOOL OPRTR NEC	9	221	627	7	40	904
8323	WELDERS	391	229	2,830	64	264	3,778
8324	BLACKSMITHS	23	28	83	7	10	151
8325	ELECTROPLATERS	23	140	214	9	27	413
8326	MOLDERS	33	16	79	7	13	148
8327	MTL PRCSNG WRK NEC	6	121	148	5	11	291
8428	COPPERSMITHS	4	0	24	9	1	38
8429	SHEET METAL MECHNC	358	991	3,145	395	315	5,204
8430	BOILERMAKERS	205	207	642	79	97	1,230
8431	METAL FABRICATOR	5	3	72	12	12	104
8433	MBL EQP MTL WORKER	1	5	34	0	1	41
8434	METAL WORKERS NEC	370	315	2,431	290	354	3,760
8583	FLD SYSTMS WORKERS	11	81	301	18	28	439
8584	A/C PRPLLR MECHANC	7	101	130	8	19	265
8585	A/C + RCKT ENG MCH	53	526	1,082	187	130	1,978
8586	A/C OVRHL MECHANIC	105	920	1,323	360	213	2,921
8640	PIPE COVERER-INSLT	146	209	452	19	57	923
8641	PIPEFITTERS	853	1,006	4,649	603	600	7,711
8642	PLUMBERS	3	81	368	13	5	470
8643	PIPEFTTNG WRKR NEC	0	2	7	1	0	10
8747	BOAT BUILDER	13	10	46	8	6	83

Figure 9 (continued)   29

ALL NAVY

CODE	OCCUPATION CLASS	APPRENT	SEMI-SKI	JOUR-MEN	LEADERS	SUPERVRS	TOTAL
8748	WOOD CRAFTSMEN	86	61	596	44	68	855
8749	MARINE CARPENTER	13	1	7	5	2	28
8750	CARPENTERS	30	182	1,334	104	96	1,746
8751	MODEL MKR NON-METL	0	1	7	0	0	8
8752	PATTERNMAKERS	12	0	60	5	7	84
8753	WOODMAKERS NEC	6	833	124	52	132	1,147
8754	SHIPWRIGHT	90	44	497	44	69	744
8870	MARINE MACHINIST	52	89	460	70	59	730
8871	SHIPFITTERS	1	7	24	20	2	54
8872	MRN EQPT RPRMN NEC	0	6	645	23	154	828
8901	TLPHN INSTLR-RPRMN	10	32	247	12	28	329
8914	SRVIVL EQP MECHANC	0	9	0	0	0	9
8915	FABRIC-LEATHER WRK	59	112	240	16	22	449
8917	INSTRMNT MCHNC GEN	83	153	1,137	22	94	1,489
8918	A/C INSTRMNT MCHNC	4	39	64	14	0	121
8922	MASNS PLSTR ROOFRS	5	260	374	16	20	675
8935	MOTION PICTURE WRK	0	70	0	1	5	76
8937	PAINTERS	139	418	2,626	112	227	3,522
8944	PLASTICS WORKERS	14	35	148	7	11	215
8945	PRINTING WORKERS	1	398	843	125	80	1,447
8946	TIRE + RUBBER WRKR	0	104	37	1	5	147
8954	FCLTS MNTNANCE WRK	3	926	606	118	902	2,555
8955	INDOOR EQP MECHANC	1	67	211	6	28	313
8956	A/C EQPMNT MECHANC	132	101	1,235	57	101	1,626
8957	MILLWRIGHT	12	3	76	5	9	105
8958	A/C LCH-ARST EQ MC	7	36	94	14	16	167
8959	FXD EQP RPRMN NEC	14	347	1,188	110	179	1,838
8960	POWER PLANT OPRTRS	17	19	271	27	40	374
8961	FXD EQP OPRTR NEC	25	1,292	2,057	100	387	3,861
8962	RIGGERS	0	45	153	2	17	217
8963	MOBL EQP OPRTR NEC	0	4,921	1,158	77	375	6,531
8964	HEAVY DUTY EQP OPR	71	190	1,231	70	142	1,704
8965	AUTOMOTIVE MECHANC	27	101	1,145	20	102	1,395
8966	MOBL EQP RPRMN NEC	1	255	169	6	72	503
8967	SHIP OPERATING WRK	0	83	3,207	598	8	3,896

Figure 9 (continued)   30

DEPARTMENT OF THE NAVY
OFFICE OF CIVILIAN PERSONNEL

POPULATION DISTRIBUTED BY CAMAS STATE AS OF SEP 1976

ALL NAVY

CODE	OCCUPATION CLASS	APPRENT	SEMI-SKI	JOUR-MEN	LEADERS	SUPERVRS	TOTAL
8968	RAILRD OPRTNG WRKR	0	59	132	1	10	202
8969	RAILRD MNTNCE WRKR	0	99	25	7	8	139
8973	AMMNTN-EXPLSV WRKR	0	1,267	139	106	165	1,677
8974	WEAPONS MECH + RPR	40	368	1,029	107	132	1,676
8975	PRODUCTION EXPIDTR	0	618	8	1,099	436	2,161
8976	WAREHOUSE WORKERS	0	7,656	28	421	722	8,827
8977	PACKNG-PROCSNG WRK	0	2,076	3	37	170	2,286
8978	LAUND-DRY CLN WRKR	0	367	0	18	29	414
9979	FOOD SERVICE WORKR	0	2,303	1	171	165	2,640
8980	WARD ATTENDANTS	0	57	0	1	2	60
8981	MCHD-PSNL SRVC WRK	0	1,326	0	96	48	1,470
8983	PRSRVTN PCKNG WRKR	0	116	0	1	2	119
8987	MISC UNGRADED NEC	243	1,191	1,826	122	298	3,680
9988	GARDENERS-LABORERS	1	5,844	8	169	194	6,216
	ALL NAVY	6,784	43,163	63,614	8,559	10,342	132,462

Figure 9 (continued)   31

ACTUAL SALARIES AND NUMBERS OF DIRECT HIRE U S CITIZENS AS OF 31 DEC 74

NAVY WIDE

OCCUPATION CLASS	APPRENT		SEMI-SKI		JOUR-MEN		LEADERS		SUPERVRS	
	AVER. SAL	NO.	AVER. SAL	NO.	AVER. SAL	NO.	AVER. SAL	NO.	AVER. SAL	NO.
ELECTRONIC MECHS	$ 9,190	726	$10,873	1071	$13,363	6122	$16,167	548	$17,822	680
ELECTRICIANS	$ 8,919	829	$10,766	1868	$12,452	6918	$15,513	727	$16,630	756
MACHINE TOOL OPS	$ 9,000	800	$10,383	774	$12,725	5648	$15,859	604	$17,235	587
METAL PROC WORKERS	$ 8,668	412	$ 9,973	889	$12,687	3587	$14,690	104	$16,546	358
METAL WORKERS	$ 8,719	590	$10,819	1746	$12,478	5171	$15,974	529	$16,429	609
AIRCRAFT WORKERS	$ 9,376	160	$10,996	1926	$12,664	3094	$15,789	544	$16,789	409
PIPEFITTING WRKRS	$ 8,832	867	$10,544	1152	$12,353	5442	$15,830	562	$16,393	633
WOODWORKERS	$ 8,673	252	$11,099	1311	$12,078	2785	$14,549	266	$15,875	418
MARINE EQUIP WRKRS	$ 8,527	921	$10,870	849	$12,882	4676	$16,053	807	$17,103	783
MISC CRAFTMEN/OPS	$ 8,950	932	$10,188	30149	$11,812	21938	$14,803	3618	$16,005	5030
LABORERS	$ 6,791	2	$ 8,229	7248	$12,274	10	$ 9,399	154	$12,604	202

Both of these factors are used within the CAMAS computer programs to produce expected retirement projections. One assumption which is used in the expected retirement projections is that those within 5 years of retirement eligibility will not change DONOL occupation and level category. The optional CSC retirement rules (i.e., 55 years of age and 30 years length of service, 60 years of age and 20 years of service, or 62 years of age and 5 years length of service) are used to compute the number of retirement eligibles in each of the forecast periods. Additionally, the programs compute the rates at which those who were eligible actually retired. These rates are then multiplied by those who are eligible in the first period of the forecast. This results in a projection of (a) those who are expected to retire, and (b) those who are expected to remain in the population under study. For the second period the process is repeated using those who are first eligible in the second period plus those remaining from those first eligible in the first period. These calculations can be repeated in a similar manner for each of the periods used in the overall projection. An example of the output using the DONOL functional occupation groups and levels for GS employees is in figure 11. These data cover FY 75-79.

In addition to providing reports of expected retirements, these data are an important input in the development of intake requirements projections. This is the subject of the next section.

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DIRECT HIRE U S NATIONAL EXPECTED RETIREMENTS FOR FISCAL YEAR 1975

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ALL NAVY

OCCUPATION CLASS	APPRENT	SEMI-SKI	JOUR-MEN	LEADERS	SUPERVRS	TOTAL
ELECTRONIC MECHS	0	10	89	15	16	130
ELECTRICIANS	0	26	214	25	27	292
MACHINE TOOL OPS	0	16	170	20	26	232
METAL PROC WORKERS	0	15	95	2	13	125
METAL WORKERS	0	25	200	21	26	272
AIRCRAFT WORKERS	0	24	110	17	16	167
PIPEFITTING WRKRS	0	16	188	16	20	240
WOODWORKERS	0	67	114	13	28	222
MARINE EQUIP WRKRS	0	8	158	35	22	223
MISC CRAFTMEN/OPS	0	918	766	162	244	2,090
LABORERS	0	168	0	4	9	181
FISCAL YEAR 1975	0	1,293	2,104	330	447	4,174

CAMAS EXPECTED RETIREMENT REPORT

Figure 11

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DIRECT HIRE U S NATIONAL EXPECTED RETIREMENTS FOR FISCAL YEAR 1976

ALL NAVY

OCCUPATION CLASS	APPRENT	SEMI-SKI	JOUR-MEN	LEADERS	SUPERVRS	TOTAL
ELECTRONIC MECHS	0	11	102	16	20	149
ELECTRICIANS	0	25	216	24	30	295
MACHINE TOOL OPS	0	18	180	25	31	254
METAL PROC WORKERS	0	15	104	3	17	139
METAL WORKERS	0	27	213	26	33	299
AIRCRAFT WORKERS	0	26	129	20	21	196
PIPEFITTING WRKRS	0	14	184	18	23	239
WOODWORKERS	0	69	121	14	28	232
MARINE EQUIP WRKRS	0	7	165	38	26	236
MISC CRAFTMEN/OPS	0	936	791	170	270	2,167
LABORERS	0	172	0	5	9	186
FISCAL YEAR 1976	0	1,320	2,205	359	508	4,392

Figure 11 (continued)

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DEPARTMENT OF THE NAVY
OFFICE OF CIVILIAN MANPOWER MANAGEMENT

DIRECT HIRE U S NATIONAL EXPECTED RETIREMENTS FOR FISCAL YEAR 1977

ALL NAVY

OCCUPATION CLASS	APPRENT	SEMI-SKI	JOUR-MEN	LEADERS	SUPERVRS	TOTAL
ELECTRONIC MECHS	0	12	118	19	25	174
ELECTRICIANS	0	28	223	31	33	315
MACHINE TOOL OPS	0	18	197	29	35	279
METAL PROC WORKERS	0	15	119	4	17	155
METAL WORKERS	0	27	229	31	36	323
AIRCRAFT WORKERS	0	28	145	26	23	222
PIPEFITTING WRKRS	0	15	189	19	25	248
WOODWORKERS	0	65	126	16	27	234
MARINE EQUIP WRKRS	0	7	163	42	30	242
MISC CRAFTMEN/OPS	0	976	813	179	295	2,263
LABORERS	0	172	0	7	11	190
FISCAL YEAR 1977	0	1,363	2,322	403	557	4,645

Figure 11 (continued)

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DIRECT HIRE U S NATIONAL EXPECTED RETIREMENTS FOR FISCAL YEAR 1978

ALL NAVY

OCCUPATION CLASS	APPRENT	SEMI-SKI	JOUR-MEN	LEADERS	SUPERVRS	TOTAL
ELECTRONIC MECHS	0	14	129	20	28	191
ELECTRICIANS	0	26	236	33	38	333
MACHINE TOOL OPS	0	21	204	30	40	295
METAL PROC WORKERS	0	18	139	4	19	180
.METAL WORKERS	0	28	244	35	39	346
AIRCRAFT WORKERS	0	33	156	27	25	241
PIPEFITTING WRKRS	0	13	197	22	27	259
WOODWORKERS	0	63	130	17	27	-237
MARINE EQUIP WRKRS	0	8	172	39	35	254
MISC CRAFTMEN/OPS	0	1,026	839	190	302	2,357
LABORERS	0	178	0	7	12	197
FISCAL YEAR 1978	0	1,428	2,446	424	592	4,890

Figure 11 (continued)

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DEPARTMENT OF THE NAVY
OFFICE OF CIVILIAN MANPOWER MANAGEMENT

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DIRECT HIRE U S NATIONAL EXPECTED RETIREMENTS FOR FISCAL YEAR 1979

ALL NAVY

OCCUPATION CLASS	APPRENT	SEMI-SKI	JOUR-MEN	LEADERS	SUPERVRS	TOTAL
ELECTRONIC MECHS	0	14	138	22	30	204
ELECTRICIANS	0	27	246	31	37	341
MACHINE TOOL OPS	0	22	217	32	38	309
METAL PROC WORKERS	0	20	143	4	19	186
METAL WORKERS	0	29	243	31	40	343
AIRCRAFT WORKERS	0	36	167	30	28	261
PIPEFITTING WRKRS	0	13	202	24	25	264
WOODWORKERS	0	70	131	18	28	247
MARINE EQUIP WRKRS	0	8	175	39	36	258
MISC CRAFTMEN/OPS	0	1,072	875	196	314	2,457
LABORERS	0	180	0	7	13	200
FISCAL YEAR 1979	0	1,491	2,537	434	608	5,070

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Figure 11 (continued)

IV. Intake requirements projections

The development of intake requirements projections requires evaluation of a number of processes simultaneously. First, data on gross requirements must be developed using the best source available. Also, a set of projected movement rates must be obtained including modifications to reflect projected retirements and other predictable phenomena. Finally, data on the current population must be obtained to provide a starting point. These projections can be further enhanced by including budgetary constraints and the costs of training and hiring and firing. First, however, an examination will be made of the method in CAMAS which includes only gross requirements, movement rates, and initial on-board data.

Perhaps the most important but most difficult task in making intake requirements projections is developing gross requirements data which are related to workload. This task can be made easier by using time periods which fit the management environment of the decisions to be made. The time periods used in the projections can be tailored to fit the application. Projections have been made using years, quarters, and combinations of quarters and years.

A project is underway in the Chief of Naval Operations (Op-01) called Shore Requirements, Standards, and Manpower Planning System (SHORSTAMPS) specifically to provide the vehicle for obtaining better military-civilian manpower requirements data. As SHORESTAMPS is expanded, these manpower requirements will be substantiated and updated. Where possible, they will be used as the official source of civilian manpower requirements data.

CAMAS has been designed to accept the gross requirements either from an external source or from proportioning estimates using projected end-strengths as a control. The use of cost analyst estimates in conjunction with workload planning systems has generally provided results superior to the straight proportionment method. However, the proportioned estimates have provided requirements data when other data were not available. Also, these estimates can form a starting point for guiding workload-related gross requirements projections. The types of populations for which gross requirements data can be developed are given in Table 5 of section II.

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The movement rates which are used in the projections
reflect the effects of expected retirements. This is done
by computing first the movement rates of all those not
eligible for retirement within the planning horizon under
consideration. Then, using expected retirements projections
in suitable mathematical equations, the movement rates are
adjusted to reflect the number of retirements in each of the
manpower categories in each of the planning periods.

The movement rates can also be modified to include
probable future conditions which are not reflected in
historical data. Currently, this capability is accomplished
by changing one movement rate at a time using a change card.
At some point in the future, this capability will be
extended to allow parametric changes which might affect
multiple movement rates in a known manner. For example, the
rates may need to be changed to reflect a temporary hiring
freeze.

In addition to the initial starting population, gross
requirements, and adjusted movement rates, three other data
inputs are used to make intake requirements projections.

There are projected total end-strengths, upper and lower
bounds on the individual gross requirements, and relative
priorities of hiring and firing in relation to gross
requirements fulfillment. These data are entered into CAMAS
processing by means of a small deck of control cards. The
total end-strength requires one card per period being
projected. The upper and lower bounds are generated
parametrically by providing a card with the percentage of
change from the gross manpower requirement. For example, if
an 8% change were allowable and 100 were required in a
particular manpower category, the computer would
automatically generate 92 as the lower bound and 108 as the
upper bound. One can also insert specific upper and lower
bounds for those manpower categories for which non-uniform
bounds were desired. The computer automatically develops
the parametric bounds for all other categories.

The relative priorities of hiring and firing in
relationship to the gross manpower requirement are entered
into CAMAS processing by means of penalty values. Unless
otherwise specified, the values set are:

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EXAMPLE OF A MODEL GIVING NAVYWIDE MANPOWER PROJECTIONS

PRODUCER 1 CATEGORY	ABOARD SEP 77	SEP 78 ABOARD	HIRES	RIFS	SEP 79 ABOARD	HIRES	RIFS	SEP 80 ABOARD	HIRES	RIFS	SEP 81 ABOARD	HIRES	RIFS	SEP 82 ABOARD	HIRES	RIFS
SCI & ENG 1-4																
SCI & ENG 5-9	1522	1522	845		1522	947		1522	845		1522	845		1522	845	
SCI & ENG 9-12	17279	17279	225		17279	225		17279	225		17279	225		17279	225	
SCI & ENG 13-15	12129	12129	466		12129	466		12129	466		12129	466		12129	466	
SCI & ENG 16-18	152	152	11		152	11		152	11		152	11		152	11	
OTHER PROF 1-4																
OTHER PROF 5-8	1132	1132	373		1132	374		1132	373		1132	373		1132	373	
OTHER PROF 9-12	1955	1955	71		1955	71		1955	71		1055	71		1955	71	
OTHER PROF 13-15	859	809	77		859	37		859	37		859	37		859	37	
OTHER PROF 16-18	23	23			23			23			24			24		
ADMIN 1-4	43	40	11		43	14		43	14		43	14		43	14	
ADMIN 5-9	3872	3872	900		3872	903		3872	900		3972	900		3872	900	
ADMIN 9-12	21570	21570	542		21570	543		21570	542		21570	542		21570	542	
ADMIN 13-15	5705	5705	289		5705	289		5705	289		5705	289		5706	289	
ADMIN 16-18	49	49			49			49			50			53		
TECHNICIAN 1-4	2940	2705	608		2940	976		2940	843		2940	843		2940	843	
TECHNICIAN 5-9	14094	14094	1274		14094	1311		14094	1274		14094	1274		14094	1274	
TECHNICIAN 9-12	17539	17539	769		17539	769		17539	769		17539	769		17539	769	
TECHNICIAN 13-15	382	302	40		382	40		382	40		382	40		382	40	
CLERICAL 1-4	32155	32155	9405		32155	9416		32155	9405		32155	9405		32155	9405	
CLERICAL 5-8	19895	19895	906		19895	908		19895	906		19895	906		19895	906	
CLERICAL 9-12	283	283	12		283	12		283	12		283	12		283	12	
CLERICAL 13-15	3	3	2		3	2		3	2		3	2		3	2	
OTHER GS 1-4	4316	4040	1374		4316	1813		4316	1650		4316	1650		4316	1650	
OTHER GS 5-8	4901	4901	145		4901	211		4901	145		4901	165		4901	165	
OTHER GS 9-12	261	261	11		261	11		261	11		261	11		261	11	
OTHER GS 13-15	3	3	1		3	1		3	1		3	1		3	1	
PRODUCER TOTALS	163103	162589	18377		163103	19251		163103	18851		163103	18851		163103	18851	
GRAND TOTALS	163103	162589	18377		163103	19251		163103	18851		163103	18851		163103	18851	

Figure 12
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MANPOWER REPORT FOR   YEAR   ENDING SEP 1982

CODE	CATEGORY		ABOARD	HIRES	RIFS	GOAL	DISCREP	LIMITS	
1011	SCI & ENG	1-4	0					0	0
1012	SCI & ENG	5-8	1,522	845		1,522		1,400	1,644
1013	SCI & ENG	9-12	17,279	225		17,279		15,897	18,661
1014	SCI & ENC	13-15	12,129	466		12,129		11,159	13,099
1015	SCI & ENG	16-16	152	11		152		140	164
1021	OTHER PROF	1-4	0					0	0
1022	OTHER PROF	5-8	1,132	373		1,132		1,041	1,223
1023	OTHER PROF	9-12	1,955	71		1,955		1,799	2,111
1024	OTHER PROF	13-15	899	37		899		827	971
1025	OTHER PROF	16-16	24			23	1	21	25
1031	ADMIN	1-4	43	14		43		40	46
1032	ADMIN	5-8	3,872	900		3,872		3,562	4,182
1033	ADMIN	9-12	21,570	542		21,570		19,844	23,296
1034	ADMIN	13-15	5,706	289		5,706		5,250	6,162
1035	ADMIN	16-16	53			49	4	45	53
1041	TECHNICIAN	1-4	2,940	843		2,940		2,705	3,175
1042	TECHNICIAN	5-8	14,094	1,274		14,094		12,966	15,222
1043	TECHNICIAN	9-12	17,539	769		17,539		16,136	18,942
1044	TECHNICIAN	13-15	382	40		382		351	413
1051	CLERICAL	1-4	32,155	9,405		32,155		29,583	34,727
1052	CLERICAL	5-8	19,895	966		19,895		18,303	21,487
1053	CLERICAL	9-12	293	12		293		269	306
1054	CLERICAL	13-15	3	2		3		3	3

EXAMPLE OF A MODEL GIVING NAVYWIDE MANPOWER PROJECTIONS

Figure 13

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MANPOWER REPORT FOR   YEAR   ENDING SEP 1982

CODE	CATEGORY		AWARD	HIRES	FIFS	GOAL	DISCREP	LIMITS	
1061	OTHER GS	1-4	4,316	1,655		4,316		3,971	4,661
1062	OTHER GS	5-9	4,931	165		4,901		4,509	5,293
1063	OTHER GS	9-12	261	11		261		240	282
1064	OTHER GS	13-15	3	1		3		3	3

	PRODUCER	TOTALS	163,106	18,851		163,173		

	SEP 1982	TOTALS	163,136	18,851		163,173		

Figure 13 (continued)

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EXAMPLE OF A MODEL GIVING NAVYWIDE MANPOWER PROJECTIONS

Hiring 1	Deficiency 5
Firing 10	Excess 5

This priority scheme says that firing (RIF's) is a last resort (10 is the highest value) and hiring is preferred over deficiencies (1 is less than 5). However, excesses over goals are preferred over firing (5 is less than 10). Computational experience in a large variety of examples has shown that this scheme works quite well. The ordering of the values has been found to be generally more important than the actual values themselves.

The intake requirements projections can be developed for the types of populations given in Table 5 in section II of this manual. Two output reports can be produced in CAMAS. Figure 12 is an example of the summary intake requirements report for the general schedule DONOL major occupation groups Department-wide for FY 77-31. The "RIFS" column indicates redundant skills requirements, suggesting lower promotion rates or retraining of personnel for use in other skill categories. Figure 13 is an example of the detailed intake requirements report covering the Fiscal Year 1982 period for the Department-wide projection of general schedule DONAL major occupation groups. This is the final year of a five period year.

V. Equal Employment Opportunity goals planning

CAMAS includes the capabilities to assist in realistic EEO goals planning and tracking. Two types of manpower goals are needed for each of the planning periods. The first are Workload Goals, which define the numbers of required personnel in each job category needed to perform the mission of the organization irrespective of racial and ethnic group. The second are the EEO goals which quantitatively define the numbers of required personnel for a given time frame for full achievement of the overall goal of a fully integrated workforce. These EEO goals are influenced by supply limitations as determined from labor market projections. Data is provided to the model on the current on-board population and on projected personnel movements within the organization. Management constraints or administratively determined controls are also included in the model, i.e., End Strengths, personnel ceilings, and High Grade Targets. Priority weights are also included to indicate the relative importance of meeting the workload and

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EEO ACCOUNTABILITY REPORT

SAMPLE REPORT

BLACK MALE

OCCUPATION	LEVEL	ABOARD SEP 76	ABOARD SEP 77	GOAL SEP 77	DISCREP SEP 77	GOAL SEP 81	DESIRED CHANGE BY SEP 81	
							DIFF	PERCENT
SCI + ENG	GS 5-8	25	25	25	0	34	9	26.5
	GS 9-12	350	348	345	3	340	-8	-2.4
	GS 13-15	263	261	264	-3	297	36	12.1
	GS 16-18	2	2	2	0	3	1	33.3
OTH PROF	GS 5-8	23	24	25	-1	33	9	27.2
	GS 9-12	62	64	64	0	76	12	15.8
	GS 13-15	13	13	13	0	15	2	13.3
ADMIN	GS 1-4	2	2	2	0	2	0	0.0
	GS 5-8	151	174	189	-15	340	166	48.8
	GS 9-12	775	770	764	6	1,167	397	34.0
	GS 13-15	113	112	112	0	114	2	1.8
	GS 16-18	1	1	1	0	1	0	0.0
TECHNICIAN	GS 1-4	145	144	144	0	144	0	0.0
	GS 5-8	945	857	851	6	898	41	4.6
	GS 9-12	697	695	694	1	687	-8	-1.2
	GS 13-15	3	4	7	-3	24	20	83.3
CLERICAL	GS 1-4	913	972	1,056	-84	1,638	666	40.1
	GS 5-8	553	589	656	-67	913	324	35.5
	GS 9-12	15	18	17	1	25	7	28.0
OTHER GS	GS 1-4	609	612	615	-3	634	22	3.5
	GS 5-8	442	471	463	8	497	26	5.2
	GS 9-12	5	7	6	-1	22	15	68.2
TOTAL BLACK MALE		5,904	6,165	6,317	-152	7,904	1,739	22.0

Figure 14
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EEO goals in terms of hiring and firing policies and short
and long run objectives.

All the various data are entered into the EEO model.
Two types of management reports are produced. The first is
a detailed yearly report which provides data on: how well
each of the goals is met; the workforce distribution by
social class at the end of the planning periods; and the
numbers of hires (or excesses) necessary to obtain the
required number of personnel to perform the mission after
all internal transfers have been accounted for. The format
of this report is the same as that shown in Figure 13. The
second report is a summary over the five years projected in
the model. This report shows the starting population and
the projected workforce distributions at the end of each of
the projected periods. Also included is the hiring (or
excess) data for each of the projected periods. The format
of this report is the same as that shown in Figure 12.

The projected workforce distributions provide the
numbers which will be used for monitoring accomplishment.
Figure 14, is an example, in part, of the type of report to
be used. This report provides data on:

- The numbers in each social group in each
  job category at the start of the period
  (on-board, time 1)
- The changes by numbers and rates both
  internal and external that have occured
  (losses and gains)
- The numbers in each social group at the
  end of the period (on-board, time 2)
- The desired workforce distribution after
  EEO goals considerations at the time of
  the end of the period
- The numerical difference between the
  desired EEO goal and the end period on-
  board population
- The percentage accomplishment of the
  desired EEO goals

VI.   Policy testing models

The intake requirements projections discussed in section
IV are actually one set of evaluations us'ng a policy
testing model. The chief difference between a projection
and a model is that a model is used to examine more than one

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alternative. A model is exactly what the word implies - a scaled down version of a real world situation or problem. A model is something that, if poked in a particular way, will react in the same way as the real world would to a similar poke. How close the reaction is, depends, of course, on how well the model is constructed. One of the major uses of a model is to answer "what if" questions for testing policy.

A review will now be made of the CAMAS recruiting requirements model. First, a discussion will be provided of the underlying problem. Then, a small numerical example will be shown to illustrate some of the uses of the model.

The problem which is being examined is as follows: Given a knowledge of, or a guess at, the numbers of people by occupational specialty and level needed at certain times in the future, to find the numbers and kinds of people who ought to be hired, or reduced-in-force (RIFed) at each time. This seems a modest enough problem; a little thought will show, though, that many advantages are to be gained through the application of a computerized model. For one thing, if a future cut seems likely, it may be better not to hire everyone possible now if you're only going to have to fire later; it may be better to use the money for something else--like substituting technology for manpower. Again, the sheer amount of data and the number of constraints that are relevant is more than that with which any one person can reasonably deal.

Estimates are needed by occupational specialty and level of the total numbers needed at each time; these are the gross requirements. Another important constraint may be manpower ceilings and perhaps financial budgets and average salaries of each of the manpower categories. This financial budgetary data may be redundant since the gross requirements may have been obtained as part of a budgetary exercise. The CAMAS recruiting requirements model can operate with or without considering financial budgetary data.

Another important factor needed is the manpower movement rates. Because a number of employees of a given kind are available now does not mean that they will remain at a future time. Some will move to other occupations. Others will be promoted. Still others will leave. Beyond that, if a manager knows that he will need a given number of employees of a certain type 4 years from now, the best way of meeting this need may be to hire enough lower-level

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employees of that specialty now--even though the current need is not great--so that they will be at the appropriate level and have the necessary experience when they are needed. This philosophy is included in the Department of the Navy's civilian career programs.

An important constraint is limits on the numbers of employees of any given kind. There may, for instance, be occupational specialties in which certain minimum levels are needed for the organization to function. In such cases, lower limits would be imposed on the numbers of employees in these positions. Similarly, there may be maximum levels for some occupational specialties.

There must be some way of indicating preferences or priorities. If, in a given year, a surplus of a certain type of worker is projected, the excess can be fired or some or all of it can be retained. For a number of reasons-- there are so few of these workers, they're so near retirement, the surplus is probably only temporary, etc.--it may be better in the long run simply to keep the excess in this category rather than lay them off or RIF them. This is, of course, on a continuum: up to a certain point the excess can be tolerated, but beyond that, any surplus employees will have to go. Contrariwise, if there is going to be a shortage of a given type of worker, additional money can be found to make good the shortage, or a reduced level of workers will be accepted and the level of program accomplishment changed accordingly.

The use of models does not change the nature of the manager's job; what it does is give him an additional tool of which he can make use in doing his main job--that of making decisions. It doesn't relieve the manager of the burden of making decisions; it simply gives him an opportunity to try out various alternatives, and see what will probably result, before finally committing himself to a given course of action. To summarize, the objective of the CAMAS recruiting requirements model is to meet a set of manpower requirements or goals "as closely as possible" over time. This is done by setting the various priorities or penalties for moving away from the manpower requirements. Also, constraints are set within which the requirements must be met. These constraints may include: manpower already on-board, upper and lower bounds on individual manpower requirements; attrition (including retirements and internal transfers between job categories); total manpower controls; and total salary budgets.

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In order to illustrate the use of the CAMAS recruiting requirements model, a small numerical example will now be given. In this example planning will be restricted to two categories of manpower over two time periods. The data for alternative 1 of this problem are given in Figure 15. Using these data, the results obtained from the computer are given in Figure 16. In this output the manpower requirements have not been met in either period. The constraining factors are a combination of the firing penalties and the budget in Year 2. Since RIFing is permitted only as a last resort, less Category 2 manpower was hired in Year 1 than was needed, even though there was plenty of money in Year 1.

Other alternatives which will be examined are as follows:

Alternative	Changes from Alternative 1
2	Lower Bound for Category 2 Year 1 to be 6500
3	Budget in Year 2 to be 150
4	Budget in Year 2 to be 150 Ceiling in Year 1 to be 10000

In Alternative 2, the placing of a lower limit of 6500 on Category 2 in Year 1 had multiple effects. The results are shown in figure 17. First, hiring of Category 2 manpower in Year 1 was increased from 1108 to 1350. However, this also required a higher number of Category 2 manpower in Year 2 in order not to fire. This used up more of the limited budget in year 2 for Category 2 manpower and consequently less Category 1 manpower could be maintained. This in turn restricted the number of Category 1 manpower in Year 1.

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)
RECRUITING REQUIREMENTS MODEL
INPUT FOR NUMERICAL EXAMPLE
ALTERNATIVE 1

	Manpower Data			Salaries	
Category	On-board				
	Year	Year 1	Year 2	Year 1	Year 2
1	6000	6500	6300	$8,000	$8,500
2	6500	7000	6800	10,000	10,000

Transition Data
(Read Across)

	Category 1	Category 2
Category 1	.80	.10
Category 2	.15	.70

	BUDGET	CEILING
Year 1	$150 million	15,000 personnel
Year 2	105 million	15,000 personnel

PENALTIES

Type	Value
Hiring	1
Firing	3
Deficiency	2
Excess	2

Figure 15

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)
RECRUITING REQUIREMENTS MODEL EXAMPLE
ALTERNATIVE 1 RESULTS

Numbers on board in Year 0

    In Category 1 there are 6000
    In Category 2 there are 6500

Numbers on board in Year 1

Category	Actual	Goal	Hiring	Firing	Salary
1	6500	6500	725	0	8000
2	6258	7000	1108	0	10000

Numbers on board in Year 2

Category	Actual	Goal	Hiring	Firing	Salary
1	6139	6300	0	0	8500
2	5031	6800	0	0	10500

Budgets	Actual	Maximum	On-board Ceilings
In Year 1	114.58	150	15000
In Year 2	105.007	105	15000

Figure 16

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)
RECRUITING REQUIREMENTS MODEL EXAMPLE
ALTERNATIVE 2 RESULTS

Numbers on board in Year 0

    In Category 1 there are 6000
    In Category 2 there are 6500

Numbers on board in Year 1

Category	Actual	Goal	Hiring	Firing	Salary
1	6234	6500	459	0	8000
2	6500	7000	1350	0	10000

Numbers on board in Year 2

Category	Actual	Goal	Hiring	Firing	Salary
1	5962	6300	0	0	8500
2	5173	6800	0	0	10500

Budgets	Actual	Maximum	On-board Ceilings
In Year 1	114.872	150	15000
In Year 2	104.993	105	15000

Figure 17

Enclosure (1)

COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)
RECRUITING REQUIREMENTS MODEL EXAMPLE
ALTERNATIVE 3 RESULTS

Numbers on board in Year 0

In Category 1 there are 6000
In Category 2 there are 6500

Numbers on board in Year 1

Category	Actual	Goal	Hiring	Firing	Salary
1	6500	6500	725	0	8000
2	7000	7000	1108	0	10000

Numbers on board in Year 2

Category	Actual	Goal	Hiring	Firing	Salary
1	6300	6300	0	0	8500
2	6800	6800	0	0	10500

Budgets	Actual	Maximum	On-board Ceilings
In Year 1	122.000	150	15000
In Year 2	125.044	150	15000

Figure 18

COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)
RECRUITING REQUIREMENTS MODEL EXAMPLE
ALTERNATIVE 4 RESULTS

Numbers on board in Year 0

In Category 1 there are 6000
In Category 2 there are 6500

Numbers on board in Year 1

Category	Actual	Goal	Hiring	Firing	Salary
1	5775	6500	725	0	8000
2	4225	7000	925	0	10000

Numbers on board in Year 2

Category	Actual	Goal	Hiring	Firing	Salary
1	6300	6300	1046	0	8500
2	6800	6800	3265	0	10500

Budgets	Actual	Maximum	On-board Ceilings
In Year 1	88.45	150	10000
In Year 2	124.95	150	15000

Figure 19

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In Alternative 3, the provision of an adequate budget in both time periods provides a check to see if the model responds correctly when sufficient funds are available. The results are shown in figure 18. In this case the manpower requirements have been met exactly. Also, sufficient funds were provided since the actual budgets are much lower than the maximum available. In fact, for the stated manpower requirements, the budget could be cut by $29 million in Year 1 and $25 million in Year 2.

In Alternative 4, adequate budgets are allowed but the manpower ceiling in Year 1 has been limited to 10,000. As shown in figure 19, the ceiling reduction had a drastic effect. The consequences of the ceiling cut would require a multi-period succession of undesirable management actions. In Year 1 a large number of personnel would have to be RIFed only to have to be rehired to fill the positions in Year 2. These results could be extended into even further analysis. For example, the manpower requirements could be reset with the ceiling constraint raised by 925 to see what would happen at the point of exactly no RIF's. Other controls could also be placed on the manpower requirements during the critical Year 1. These alternatives were not continued, however, since the capabilities of the use of the CAMAS recruiting requirements model have been demonstrated.

The CAMAS policy testing models can be extended as part of a more extensive model system. Research into the application of these models at the local level is actively underway. Also, extensions are being examined in the areas of general program planning on one hand and person-job assignment on the other.

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APPENDIX A

Civilian Personnel Category Codes

The civilian personnel category codes have three levels
of aggregation: Major Occupation Groups, Skill Groups, and
Census of Population Groups. These groupings allow the
Department of the the Navy (DON's) civilian personnel to be
related to external as well as internal supply and demand.
Internal Department relationships are built into the codes
at all levels of aggregation. At the Census of Population
level, the aggregations were developed to stress those
occupational areas of high interest and significance to the
Department. The Skill Groups correspond as closely as
possible to the civilian career programs and to other
national groups for overall skills planning. The DON Major
Occupational Groups allow some occupational specificity
where highly aggregated data is required for conciseness of
reporting.

The civilian personnel category codes conform with the
Civil Service Commission PATCO (Professional, Admin-
istrative, Technical, Clerical, Other) aggregation scheme.
The only difference between PATCO and the DON Major
Occupation Group is that the CSC Professional Group is
broken into two groups - Scientists and Engineers, and Other
Professionals. Thus, the correspondence is as follows:

PATCO	DON Major Occupation Group
P	2, 3
A	4
T	5
C	6
O	7

The civilian personnel category codes start with 2201 so
that there will be a minimum of confusion with the CSC
Occupation Series Codes. The DON codes have a built-in sort
sequence as follows:

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Position	Aggregation
1	Major Occupation Group
1-2	Skill Group
1-4	Census of Population Group

For example, Code 2201 breaks down as follows:

2XXX	Scientists and Engineers
22XX	Physical Scientists
2201	Chemists

All current Civil Service Commission series codes including those in which the Department employs no personnel, are covered in this list.

2XXX Scientists and Engineers

22XX Scientists

2201	Chemists	1320	Chemistry
		1382	Food Technology
		1384	Textile Technology
2202	Metallurgist	1321	Metallurgist
2203	Geol. & Geophysics	1313	Geographics
		1315	Hydrology
		1350	Geology
		1372	Geodesy
2204	Oceanographer	1360	Oceanography
2205	Physicist	1310	Physics
2206	Phys. Science NEC	1301	General Physical Science
		1306	Health Physics
		1330	Astronomy & Space Science
		1340	Meteorology
		1370	Cartography
		1373	Land Surveying
		1380	Forest Products Technology
		1386	Photographic Technology
2208	Biological Scien.	401	General Biological Scien.
		403	Microbiology
		405	Pharmocology
		406	Agricultural Extension

COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

CSC	Series Included
410	Zoology
413	Physiology
414	Entomology
430	Botany
434	Plant Pathology
435	Plant Physiology
436	Plant Quarantine & Pest Cont.
437	Horticulture
440	Genetics
454	Range Conservation
457	Soil Conservation
460	Forestry
470	Soil Science
471	Agronomy
475	Agricultural Management
480	General Fish & Wildlife Admin.
482	Fishing Biological
485	Wildlife Refuge Management
486	Wildlife Biology
487	Husbandry
493	Home Economics
701	Veterinary Medical Scien.

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

		CSC	Series Included
23XX	Engineers		
2309	Architects	808	Architecture
2310	Aerospace Eng.	861	Aerospace Engineering
2311	Chemical Eng.	892	Ceramic Engineering
		893	Chemical Engineering
2312	Civil Eng.	810	Civil Engineering
		819	Sanitary Engineering
2313	Naval Architects	871	Naval Architecture
2314	Electrical Eng.	850	Electrical Engineering
2315	Electronic Eng.	855	Electronic Engineering
2316	Industrial Eng.	896	Industrial Engineering
2317	Mechanical Eng.	830	Mechanical Engineering
2318	Welding Engineer	806	Materials Engineering
		894	Welding Engineering
2319	Nuclear Engineer	840	Nuclear Engineering
2320	Engineers NEC	801	General Engineering
		803	Safety Engineering
		804	Fire Prevention Engineer.
		807	Landscape Architecture
		858	Biomedical Engineering

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

		CSC	Series Included
		880	Mining Engineering
		881	Petroleum Engineering
		890	Agricultural Engineering
24XX	Mathematicians		
	2421 Mathematician	1520	Mathematics
	2422 Statistician	1510	Actuary
		1529	Mathematical Statistician
		1530	Statistician
	2423 Ops. Res. Analyst	1515	Operations Research
3XXX	Other Professionals		
30XX	Accountants		
	3024 Accountants	510	Accounting
		512	Internal Revunue Agent
31XX	Medical		
	3125 Professional Nurse	605	Nurse Anesthetist
		610	Nurse
		615	Public Health Nurse
	3126 Physician	602	Medical Officer
	3127 Health Prof.NEC	601	General Health Science
		630	Dietician

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

	CSC	Series Included
	631	Occupational Therapist
	633	Physical Therapist
	635	Corrective Therapist
	637	Manual Arts Therapist
	639	Educational Therapist
	644	Medical Technologist
	660	Pharmacist
	662	Optometrist
	665	Speech Pathology & Audiology
	668	Podiatrist
	680	Dental Officer
	690	Industrial Hygiene
	696	Consumer Safety

32XX Legal

		CSC	
3228	Lawyer	904	Law Clerk
		905	General Attorney
		935	Administrative Law Judge
3229	Patent Advisor	1210	Copyright Examining
		1220	Patent Administration
		1221	Patent Advisor

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

CSC Series Included

1222 Patent Attorney

1223 Patent Classifying

1224 Patent Examining

1225 Patent Interference Exam.

1226 Design Patent Examining

33XX   Education

    3330   Educator

1701 General Education & Training

1710 Education & Vocational Training

1720 Education Research & Program

1725 Public Health Educator

34XX   Miscellaneous Professional

    3407   Psychologists

    3431   Librarian

180 Psychology

1410   Librarian

1420   Archivist

    3432   Professional NEC

020   Community Planning

060   Chaplain

101   Social Science

110   Economist

130   Foreign Affairs

131   International Relations

135   Foreign Agricultural Affairs

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

CSC	Series Included
140	Manpower Research & Analysis
150	Geography
170	History
184	Sociology
185	Social Work
190	General Anthopology
193	Archeology
1015	Museum Curator
1540	Cryptography

4XXX   Management & Administrative

  40XX   Financial Management

		CSC	Series Included
4033	Financial Mgt.	501	Gen.Accounting Clerical/ Admin. (GS-11-18)
		504	Budget & Accounting
		505	Financial Management
		560	Budget Administration

  41XX   Personnel Management

4134	Personnel Mgmt.	142	Manpower Development
		160	Equal Opportunity Specialist
		201	Personnel Management

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

CSC	Series Included
212	Personnel Staffing
221	Position Classification
222	Occupational Analysis
223	Salary & Wage Administ.
230	Employee Relations
233	Labor Relations
235	Employee Development
241	Mediation
243	Apprenticeship & Training
244	Labor Mgmt Relations Exa.
249	Wage & Hour Compliance

42XX   Procurement

4235   Procurement Mgmt.

CSC	Series Included
1101	General Business & Industry
1102	Contract & Procurement
1103	Industrial Property Mgmt.
1150	Industrial Specialist

43XX   Logistics

4336   Supply Mgmt.

CSC	Series Included
1104	Property Disposal
2001	General Supply (GS-11-18)
2003	Supply Program Management

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

		CSC	Series Included
		2010	Inventory Management
		2030	Distributuion Facilities/ Storag.
		2032	Packaging
		2050	Supply Cataloging
4337	Transportation Mgmt.	2101	General Transportation (GS-11-18)
		2111	Transp. Rate/Tariff Exa.
		2121	Railroad Safety/Serv. Inspec.
		2125	Highway Safety Management
		2130	Traffic Management
		2150	Transportation Operations
		2161	Marine Cargo
4338	Safety Mgmt.	018	Safety Management
4339	Logistics Mgt.	346	Logistics Management
44XX	Quality Assurance		
440	Quality Assurance	1910	Quality Assurance
45XX	Computer Specialists		
4541	Computer Spec.	330	Digital Computer Systems Admin.

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

		CSC	Series Included
		334	Computer Specialist
46XX	Intelligence		
	4642 Intelligence Spc.	132	Intelligence
47XX	Investigators & Examiners		
	4743 Invest. & Exam.	1241	Trade Mark Examining
		1810	General Investigating
		1811	Criminal Investigating
		1812	Game Law Enforcement
		1815	Air Safety Investigating
		1816	Immigrant Inspection
		1822	Coal Mine Inspection
		1825	Aviation Safety
		1831	Security Compliance Examining
		1850	Agricultural Commodity Warehouse
		1854	Alcohol/Tobacco/Firearms Insp.
		1864	Public Health Quarantine Insp.
		1889	Import Specialist

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

	CSC	Series Included
	1890	Customs Inspection
	1892	Customs Appraising & Exam.
	1893	Customs Marine Officer
	1894	Customs Entry & Liquidating
	1898	Admeasurement
	1899	Misc. Inspec. (GS-11-18)

48XX Arts & Information Specialists

4844	Visual Information	1084	Visual Information
4845	Technical Writer	1083	Technical Writing & Edit.
		1412	Technical Info. Services
4846	Public Information	1081	Public Information
4847	Infor.Apec.NEC	1001	General Arts & Inform.
			(GS-11-18)
		1045	Translator
		1047	Interpreter
		1048	Foreign Language Broadcng.
		1051	Music Specialist
		1054	Theater Specialist
		1056	Art Specialist
		1071	Audio-Visual Production

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

		CSC	Series Included
		1082	Writing & Editing
		1085	Foreign Information
49XX	Managers & Administrators		
	4948 Gen.Mgmt.& Admin.	301	Gen.Cler.& Admin. (GS-11-18)
		340	Program Management
		341	Administrative Officer
		342	Office Services Mgmt./Sup.
	4949 Busi.Mgr.& Spec.	1130	Public Utilities Spec.
		1140	Trade Specialist
		1144	Commissary Store Mgmt.
		1149	Wage & Hour Law Administ.
		1160	Financial Analysis
		1170	Realty
		1171	Appraising & Assessing
		1173	Housing Management
		1176	Building Management
	4950 Mgt.Analyst	343	Management Analysis
	4951 Program Analysis	345	Program Analysis
	4952 Mil.Pers.Mgt.	205	Military Personnel Mgmt.

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

		CSC	Series Included
4953	Prod.Cont.Mgmt.	1152	Production Cont. (GS-11-18)
4954	Instructor	1712	Training Instruction
		1715	Vocational Rehabilitation
4955	Air Traff. Control	2152	Air Traffic Control
4956	Equipment Spec.	1670	Equip Spec. (GS-11-18)
4957	Security Admin.	080	Security Administration
4958	Printing Mgt.	1654	Printing Management
4959	Mgr. & Admin.NEC	006	Correctional Institution Admin.
		008	Institutional Adminstration
		009	Institutional Management
		011	Bond Sales Promotion
		023	Outdoor Recreation Planning
		025	Park Management
		027	Crop Insurance Administr.
		028	Environmental Protection Spec.
4959	Mgr & Admin.NEC(con't)	030	Sports Specialist
		050	Funeral Directing
		062	Clothing Design
		105	Social Insurance Adminis.

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

CSC	Series Included
106	Unemployment Insurance
120	Food Assistance Program Specialist
136	International Cooperation
187	Social Services
188	Recreation
246	Contractor Industrial Relation
391	Communications Management
488	Fish Hatching Management
570	Financial Institution Exam.
670	Hospital Administration
673	Hospital Housekeeping Mgmt.
685	Public Health Program Spec.
688	Sanitarian
828	Construction Analyst
873	Ship Surveying
920	Estate Tax Examining
930	Hearing & Appeals
942	Deportation & Exclusion Exam.

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

CSC	Series Included
945	Clerk of Court
950	Paralegal Specialist
965	Land Law Examining
967	Passport & Visa Examining
987	Tax Law Specialist
1135	Transportation Industry Analyst
1145	Agricultural Program Spec.
1146	Agricultural Marketing
1147	Agricultural Market Report.
1163	Insurance Examining
1165	Loan Specialist
1169	Internal Revenue Agent
1361	Navigational Information
1397	Document Analysis
1531	Statistical Asst. (GS-11-18)
1601	General Facilities & Equipment
1630	Cemetary Administration
1640	Facility Management

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

CSC	Series Included
1658	Laundry/Dry Cleaning Plant.Mgmt.
1659	Fishing Methods & Equip.
1666	General Housekeeping
1667	Steward
2181	Aircraft Operation

5XXX Technicians

  50XX   Engineering & Science Technicians

5060	Eng. Draftsmen	818	Engineering Drafting
5061	Electronics Tech.	856	Electronic Technician
5062	Engineering Tech.	802	Engineering Technician
		817	Surveying Technician
5063	Ind. Eng. Tech.	895	Industrial Engineering Tech.
5064	Phy. Sci. Tech.	1311	Physical Science Technician
		1316	Hydrologic Technician
		1341	Meteorological Technician
		1371	Cartographic Technician
		1374	Geodetic Technician

  51XX   Medical Technician

5165	Medical Tech.	603	Physician Assistant

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

		CSC	Series Included
		642	Nuclear Medical Techni.
		645	Medical Technician
		646	Pathology Technician
		647	Medical Radiology Techni.
		649	Medical Machine Technician
		650	Medical Technical Assist.
		664	Restoration Technician
		667	Orthotist & Prosthetist
		669	Medical Record Librarian
		672	Prosthetic Representative
		675	Medical Record Technician
		698	Environmental Health Tech.
5166	Dental Tech.	681	Dental Assistant
		682	Dental Hygiene
		683	Dental Laboratory Aid/Tech.
		684	Public Health Dental Hygiene
5167	Medical Attendant	621	Nursing Assistant
		622	Medical Aid Sterile Supplies
		625	Autopsy Assistant

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

CSC	Series Included
636	Rehabilitation Therapy Assists.
661	Pharmacy Technician
699	Health Aid & Technician

53XX Logistics Technicians

5368 Quality Inspectors

1960	Quality Inspection
1980	Agricultural Commodity Grading
1981	Agricult. Commodity Aid

5369 Log.Tech.NEC

1105	Purchasing
1106	Procurement Clerical & Assist. (GS-7-18)
1107	Property Disposal Cler./ Tech. (GS-7-18)
1152	Prod. Control (GS-1-10)
1670	Equip. Special. (GS-1-10)
2001	General Supply (GS-7-10)
2005	Supply Cler. & Tech. (GS-7-18)
2101	General Transportation (GS-7-10)

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

		CSC	Series Included
		2131	Freight Rate (GS-7-18)
		2133	Passenger Rate
		2135	Transportation Loss/Damage Cler.
		2144	Cargo Scheduling
54XX	Management Technicians		
	5471 Accounting Tech.	501	Gen. Accounting Clerical/ Admin. (GS-7-10)
		525	Accounting Technician
		526	Tax Technician
		541	Fiscal Auditing – GAO
		592	Tax Accounting
		593	Insurance Accounts
	5472 Mgmt.Tech.NEC	203	Personnel Cler./Assists. (GS-7-18)
		204	Military Personnel Cler./ Tech. (GS-7-18)
		301	General Cler. & Adminis. (GS-7-10)
55XX	Computer Technicians		
	5573 Computer Tech.&Opr.	332	Computer Operation

COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

	CSC	Series Included
	335	Computer Aid & Technician (GS-7-18)
	362	EAM Project Planning
56XX Information Workers		
5674 Illustrator	1020	Illustrating
5675 Photographer		
5676 Info. Wkrs. NEC	1001	General Arts & Information (GS-7-10)
	1010	Exhibits Specialist
	1016	Museum Specialist/Tech.
59XX Miscellaneous Technicians		
5977 Legal Rel. Wkrs.	962	Contract Representative
	963	Legal Instruments Exam. (GS-7-18)
	986	Legal Clerk & Tech. (GS-7-18)
	990	General Claims Examining
	991	Workmen's Compensation Claims Exam.
	992	Loss & Damage Claims Exam.

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

		CSC	Series Included
		993	Social Insurance Claims Ex.
		994	Unemployment Compensation Clai.
		995	Dependents/Estate Claims Exami.
		996	Veterans Claims Examining
		997	Civil Service Retirement Claims
		1202	Patent Technician
5978	Stat. & Math Asst.	1521	Mathematics Technician
		1531	Statistical Assistant (GS-7-10)
5979	Communication Spec.	393	Communications Specialist
5980	Comm.Equip.Opr.	388	Cryptographic Equip. Oper.
		389	Radio Operating
		390	Communications Relay Operations
		392	General Communications
5981	Technicians NEC	019	Safety Technician
		021	Community Planning Tech.
		026	Park Technician

Enclosure (1)

COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

CSC	Series Included
029	Environmental Protection Assistant
072	Fingerprint Identification (GS-7-18)
090	Guide
102	Social Science Aid & Tech.
119	Economics Assistant
181	Psychology Aid & Tech.
186	Social Services Aid & Asst.
189	Recreation Aid & Assistant
404	Biological Technician
421	Plant Pest Control Tech.
455	Range Technician
458	Soil Conservation Tech.
459	Irrigation System Operation
462	Forestry Technician
704	Animal Health Technician
809	Construction Control
1411	Library Technician

Enclosure (1)

COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

	CSC	Series Included
	1421	Archives Tech. (GS-7-18)
	1541	Cryptonalysis
	1702	Education & Training Tech.
	1855	Alchohol Tax Technician
	1899	Miscellaneous Inspection (GS-7-10)
	1860	Public Health Inspection
	1862	Consumer Safety Inspection
	1863	Food Inspection
	1895	Customs Warehouse Officer
	1897	Customs Aid (GS-7-18)

6XXX Clerical

  60XX Secretarial

		CSC	Series Included
6082	Typists	316	Clerk Dictating Machine Transcribing
		322	Clerk/Typist
		324	Cold-Type Composing Machine
		385	Teletypist
6083	Stenographers	312	Clerk/Steno & Reporter
		313	Stenographic or Typing Unit Sec.

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

CSC	Series Included
599	Accounting Student Train.
799	Veterinary Student Train.
899	Eng/Arch. Student Trainee
1399	Physical Science Trainee
1599	Mathematical Science Student Trainee

8XXX Craftsmen & Operations

80XX Electronics Mechanics

8002	Inst.Mech.Electronic	2602	Same
8003	Fire Control Mech.	2613	Same
8004	Electronics Mechanics	2614	Same
8005	Elec.Mech.Ordnance	2645	Same
8006	A/C Inst.Mech.Elecr.	2676	Same
8007	Elec.Mech. NEC	26--	Same

81XX Electricians

8109	Electricians	2805	Same
8110	Elec. Line Workers	2806	Same
8111	Power Plant & Elec.	2808	Same
8112	Aircraft Electricians	2892	Same
8113	Electricians NEC	28--	Same

Enclosure (1)

COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

			CSC	Series Included
82XX	Machine Tool Operators			
	8218	Model Makers, Metal	3403	Same
	8219	Machinists	3414	Same
	8220	Toolmakers	3416	Same
	8221	Mach.Tool Oper.NEC	34--	Same
83XX	Metal Processors			
	8323	Welders	3703	Same
	8324	Blacksmiths	3704	Same
	8325	Electroplaters	3711	Same
	8326	Molders	3714	Same
	8327	Metal Processors		
		NEC	37--	Same
84XX	Metal Mechanics			
	8428	Coppersmiths	3804	Same
			3853	Same
	8429	Sheet Metal Mechs.	3806	Same
	8430	Boilermakers	3808	Same
	8431	Metal Fabricator	3843	Same
	8433	Mobile Equip.Metal		
		Mechs.	3860	Same
	8434	Metal Mechs. NEC	38--	Same

Enclosure (1)

COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

			CSC	Series Included
85XX	Aircraft Mechanics			
	8583	Fluid Systems Mech.	82--	Same
	8584	A/C Propeller Mech.	85--	Same
	8585	A/C & Rocket Engine Mech.	86--	Same
	8586	A/C Overhaul Mech.	88--	Same
86XX	Pipefitting Craftsmen			
	8640	Pipe Coverer & Ins.	4203	Same
	8641	Pipefitters	4204	Same
	8642	Plumbers	4206	Same
	8643	Pipefitting Crafts-men NEC	42--	Same
87XX	Woodworkers			
	8747	Boat Builder	4603	Same
	8748	Wood Craftsmen	4605	Same
	8749	Marine Carpenter	4606	Same
	8750	Carpenters	4607	Same
	8751	Model Maker, Non-Metal	4614	Same
	8752	Patternmakers	4616	Same

Enclosure (1)

COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

			CSC	Series Included
	8753	Woodmakers NEC	46--	Same
	8754	Shipwright	5220	Same
88XX	Marine Equipment Repairmen			
	8870	Marine Machinist	6203	Same
	8871	Shipfitters	6204	Same
	8872	Marine Equip.Repair NEC	62--	Same
89XX	Misc. Craftsmen & Operators			
	8901	Telephone Installer & Repairmen	25--	Same
	8914	Survival Equip.Mech	3181	Same
	8915	Fabric & Leather Mechanics	31--	Same
	8917	Instrument Mechanics-General	33--	Same
	8918	A/C Inst. Mech.	3355	Same
	8922	Masons, Plasterers, Roofers	36--	Same
	8935	Motion Picture Craftsmen	39--	Same

Enclosure (1)

COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

		CSC	Series Included
8937	Painters	41--	Same
8944	Plastics Craftsmen	43--	Same
8945	Printing Craftsmen	44--	Same
8946	Rubber Mechanics	45--	Same
8954	Facilities Maintenance Mechanics	47--	Same
8955	Indoor Equip.Mech.	48--	Same
8956	A/C Equip. Mech	5306	Same
8957	Millwright	5315	Same
8958	A/C Launching & Arresting Equip.Mech	5346	Same
8959	Fixed Equip.Repairmen NEC	53--	Same
8960	Power Plant Oper.	5407	Same
8961	Fixed Equip.Oper.NEC	54--	Same
8962	Riggers	5722	Same
8963	Mobile Equip. Oper. NEC	57--	Same
8964	Heavy Duty Equip. Opers.	5803	Same
		5804	Same

Enclosure (1)

COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

		CSC	Series Included
8965	Automotive Mech.	5823	Same
8966	Mobile Equipment Repairmen NEC	58--	Same
8967	Ship Operators	59--	Same
8968	Railroad Operators	60--	Same
8969	Railroad Main.Mech.	61--	Same
8973	Ammunition & Explosives Mechanics	65--	Same
8974	Weapons Mech. & Repair	66--	Same
8975	Production Expediters	67--	Same
8976	Warehousemen	69--	Same
8977	Packers	70--	Same
8978	Launderers & Dry Cleaners	73--	Same
8979	Food Serv. Workers	74--	Same
8980	Ward Attendants	75--	Same
8981	Merchandising & Personnel Serv.Workers	76--	Same

Enclosure (1)

COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)

Department of the Navy Civilian Personnel Category Codes

		CSC	Series Included
8982	Equipment Cleaners	7009	Same
8983	Preservation Pack-		
	ers	7004	Same
8987	Misc. Ungraded NEC	27--	Crystal Oscillator Makers
		29--	Test Range Trackers
		32--	Glaziers & Glassblower
		40--	Optical Instrument Workers
		50--	Agricultural, Forestry, and
			Kindred Occupations
		52--	Misc. Occupations
		55--	Rock Crushing Plant Opers.
		77--	Animal Care Workers
		83--	Transducer Fabricator
		84--	Reclamation Worker
		90--	Film Processor

9XXX Laborers

  99XX Laborers

    9988 Gardeners & Labor-

      ers   35-- Same

NEC - not elsewhere classified

CSC CODE	DON CODE		CSC CODE	DON CODE
0130	3432		0301	6394/5472/4948
0131	3432		0302	6393
0132	4642		0304	6394
0134	6394		0305	6393
0135	3432		0309	6394
0312	6083		0434	2208
0313	6083		0435	2208
0316	6082		0436	2208
0318	6084		0437	2208
0319	6083		0440	2208
0322	6082		0454	2208
0324	6082		0455	5981
0330	4541		0457	2208
0332	5573		0458	5981
0334	4541		0459	5981
0335	6391/5573/5573		0460	2208
0340	4948		0462	5981
0341	4948		0470	2208
0342	4948		0471	2208
0343	4950		0475	2208
0344	6394		0480	2208
0345	4951		0482	2208
0346	4339		0485	2208
0350	6391		0486	2208
0351	6394		0487	2208
0354	6391		0488	4959
0355	6391		0493	2208
0356	6391		0499	7999
0357	6394		0501	6185/5471/4033
0359	6391		0504	4033
0362	5573		0505	4033
0382	6394		0510	3024
0385	6082		0512	3024
0388	5980		0520	6185
0389	5980		0525	5471
0390	5980		0526	5471
0391	4959		0530	6186
0392	5980		0540	6394
0393	5979		0541	5471
0394	6394		0544	6186
0401	2208		0545	6186
0403	2208		0547	6394

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CSC CODE	DON CODE		CSC CODE	DON CODE
0404	5981		0560	4033
0405	2208		0570	4959
0406	2208		0590	6186
0410	2208		0592	5471
0413	2208		0593	5471
0414	2208		0599	7999
0421	5981		0601	3127
0430	2208		062	3126
0603	5165		0799	7999
0605	3125		0801	2320
0610	3125		0802	5062
0615	3125		0803	2320
0621	5167		0804	2320
0622	5167		0806	2318
0625	5167		0807	2320
0630	3127		0808	2309
0631	3127		0809	5981
0633	3127		0810	2312
0635	3127		0817	5062
0636	5167		0818	5060
0637	3127		0819	2312
0639	3127		0828	4959
0642	5165		0830	2317
0644	3127		0840	2319
0645	5165		0850	2314
0646	5165		0855	2315
0647	5165		0856	5061
0649	5165		0858	2320
0650	5165		0861	2310
0660	3127		0871	2313
0661	5167		0873	4959
0662	3127		0880	2320
0664	5165		0881	2320
0665	3127		0890	2320
0667	5165		0892	2311
0668	3127		0893	2311
0669	5165		0894	2318
0670	4959		0895	5063
0672	5165		0896	2316
0673	4959		0899	7999
0675	5165		0904	3228
0680	3127		0905	3228

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CSC CODE	DON CODE	CSC CODE	DON CODE
0681	5166	0920	4959
0682	5166	0930	4959
0683	5166	0935	3228
0684	5166	0942	4959
0685	4959	0945	4959
0688	4959	0950	4959
069	3127	0962	5977
0696	3127	0963	6394/5977/5977
0698	5165	0965	4959
0699	5167	0967	4959
0701	2208	0986	6394/5977/5977
0704	5981	0987	4959
0990	5977	1152	5369/5369/4953
0991	5977	1160	4949
0992	5977	1163	4959
0993	5977	1165	4959
0994	5977	1169	4959
0995	5977	1170	4949
0996	5977	1171	4949
0997	5977	1173	4949
0998	6394	1176	4949
1001	6394/5676/4847	1202	5977
1010	5676	1210	3229
1015	3432	1220	3229
1016	5676	1221	3229
1020	5674	1222	3229
1021	6394	1223	3229
1045	4847	1224	3229
1046	6394	1225	3229
1047	4847	1226	3229
1048	4847	1241	4743
1051	4847	1301	2206
1054	4847	1306	2206
1056	4847	1310	2205
1060	5675	1311	5064
1071	4847	1313	2203
1081	4846	1315	2203
1082	4847	1316	5064
1083	4845	1320	2201
1084	4844	1321	2202
1085	4847	1330	2206
1087	6394	1340	2206

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CSC CODE	DON CODE	CSC CODE	DON CODE
1101	4235	1341	5064
1102	4235	1350	2203
1103	4235	1360	2204
1104	4336	1361	4959
1105	5369	1370	2206
1106	6288/5369/5369	1371	5064
1107	6290/5369	5369	2203
1130	4949	1373	2206
1135	4959	1373	2206
1135	4959	1374	5064
1140	4949	1380	2206
1144	4949	1382	2201
1145	4959	1384	2201
1146	4959	1386	2206
1147	4959	1397	4959
1149	4959	1399	7999
1150	4235	1410	3431
1411	5981	1891	7096
1412	4845	1892	4743
1420	3431	1893	4743
1421	6394/5981/5981	1894	4743
1510	2422	1895	5981
1515	2423	1896	7097
1520	2421	1897	6394/5981/5981
1521	5978	1898	4743
1529	2422	1899	6394/5781/4743
1530	2422	1910	4440
1531	6394/5978/4959		
1540	3432	1980	5368
1541	5981	1981	5368
1599	7999	2001	6289/5396/4336
1601	4959	2003	4336
1630	4959	2005	6289/5369/5369
1640	4959	2010	4336
1654	4958	2030	4336
1658	4959	2032	4336
1659	4959	2050	4336
1666	4959	2091	6392
1667	4959	2101	6290/5369/4337
1670	5369/5369/4956	2111	4337
1701	3330	2121	4337
1702	5981	2125	4337

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Ungraded

CSC CODE	DON CODE		OSC CODE	DON CODE
25--	8901		4203	8640
2602	8002		4204	8641
2631	8003		4206	8642
2614	8004		42--	8643
2645	8005		43--	8944
2676	8006		44--	8945
26--	8007		45--	8946
27--	8987		4603	8747
2805	8109		4605	8748
2806	8110		4606	8749
2808	8111		4607	8750
2892	8112		4614	8751
28--	8113		4616	8752
29--	8987		46--	8753
3181	8914		47--	8954
31--	8915		48--	8955
32--	8987		50--	8987
3355	8918		5220	8754
33--	8917		52--	8987
3403	8218		5306	8956
3414	8219		5315	8957
3416	8220		5346	8958
34--	8221		53--	8959
35--	9988		5407	8960
36--	8922		54--	8961
3703	8323		55--	8987
3704	8324		5722	8962
3711	8325		57--	8963
3714	8326		5803	8964
37--	8327		5804	8964
3804	8428		5823	8965
3806	8429		58--	8966
3808	8430		59--	8967
	8431		60--	8968
3853	8428		61--	8969
3860	8433		6203	8870
38--	8434		6204	8871
39--	8935		62--	8872
40--	8987		65--	8973
41--	8937		66--	8974
67--	8975		77--	8987

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CSC CODE	DON CODE	CSC CODE	DON CODE
1710	3330	2130	4337
1712	4954	2131	6290/5369/5369
1715	4954	2132	6187
1720	3330	2133	6187
1725	3330	2134	6288
1810	4743	2135	5369
1811	4743	2144	5369
1812	4743	2150	4337
1815	4743	2151	6394
1816	4743	2152	4955
1822	4743	2161	4337
1825	4743		
1850	4743		
1854	4743		
1855	5981		
1860	5981		
1862	5981		
1863	5981		
1864	4743		
1889	4743		
1890	4743		

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COMPUTER-ASSISTED MANPOWER ANALYSES SYSTEM (CAMAS)
Department of the Navy Civilian Personnel Category Codes
Grade/Level Groupings

Five grade/level groupings are used in CAMAS to designate career level. For General Schedule employees they include:

CAMAS Level	Grades
1	GS 1-4
2	GS 5-8
3	GS 9-12
4	GS 13-15
5	GS 16-18

For ungraded employees they include:

CAMAS Level	Pay Plans and Steps
1 (Apprentices)	WB 61-69 WD 61-69
2 (Helper and Semiskilled)	WA 01-08 WB 01-08 WF 01-08 WG 01-08 WI 01-08 WP 04-08
3 (Journeymen)	WB 09-16 WD 70 WG 09-15 WI 09-16 WM 01-26 WP 09-18
4 (Progressmen, Leader-men, etc.)	WD 01-44, 71, 75-77 WI 17-30 WL 01-99 WM 27-30 WP 31-46 WX 01-99
5 (Supervisors)	WA 31-94 WD 45-54, 72-74, 78 WF 31-94 WI 31-35 WN 01-99 WP 47-94 WR 01-99 WS 01-99 WY 01-99

CSC CODE	DON CODE		OSC CODE	DON CODE
69--	8976		82--	8583
7004	8983		83--	8987
7009	8982			
70--	8977		84--	8987
73--	8987		85--	8584
74--	8979		86--	8585
75--	8980		88--	8586
76--	8981		90--	8987